

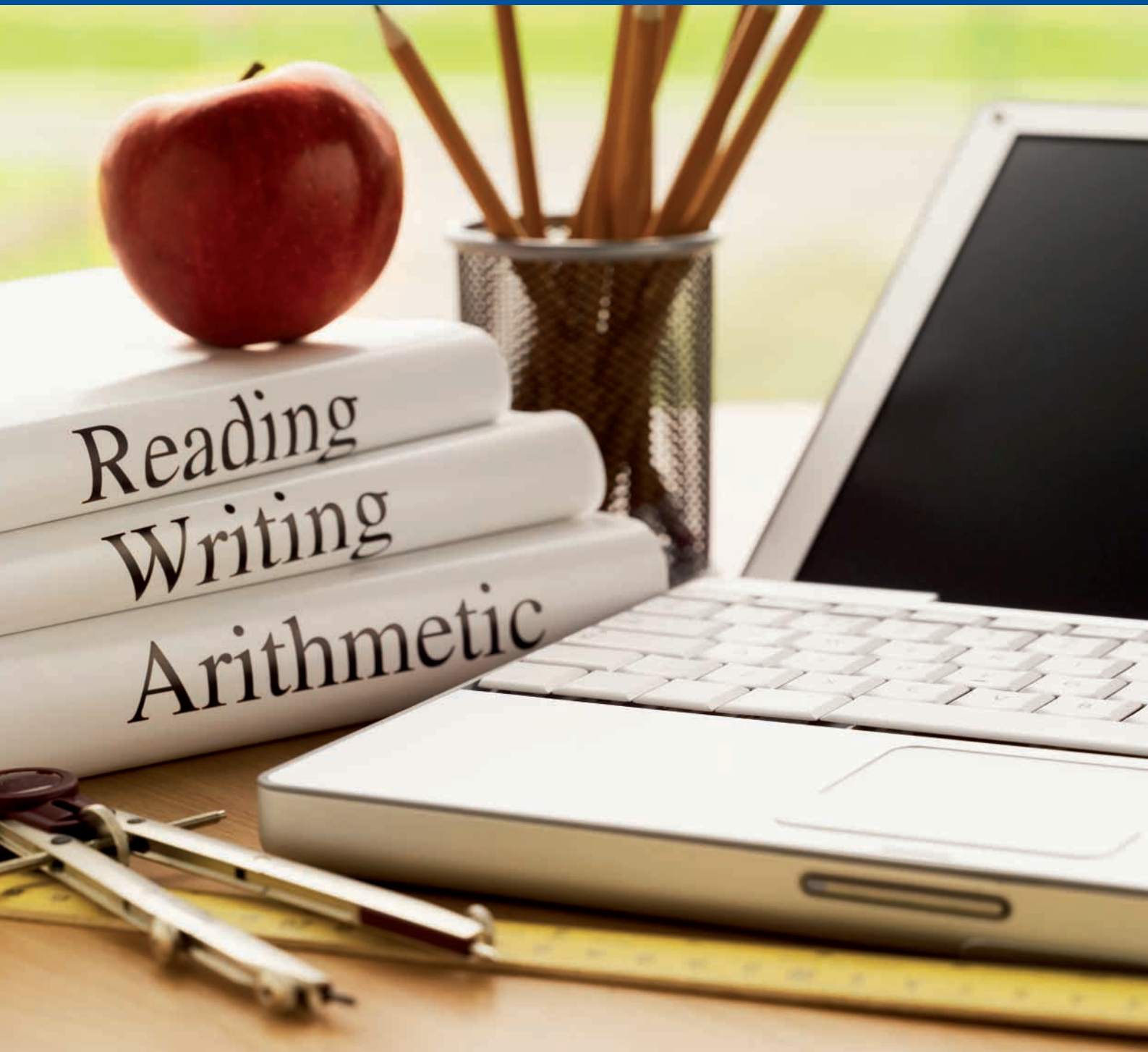


Northern Ireland Audit Office

Improving Literacy and Numeracy in Schools

REPORT BY THE COMPTROLLER AND AUDITOR GENERAL

HC 953, Session 2005-06, 29 March 2006





Northern Ireland Audit Office

**Report by the Comptroller and Auditor General
for Northern Ireland**

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Improving Literacy and Numeracy in Schools

This report has been prepared under Article 8 of the Audit (Northern Ireland) Order 1987 for presentation to the House of Commons in accordance with Article 11 of that Order.

J M Dowdall CB
Comptroller and Auditor General

Northern Ireland Audit Office
28 March 2006

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Abbreviations

CCEA	Council for the Curriculum Examinations and Assessment
CCMS	Council for Catholic Maintained Schools
ETI	Education and Training Inspectorate
OECD	Organisation for Economic Co-operation and Development
OFMDFM	Office of the First Minister and Deputy First Minister

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Executive Summary

1. A major policy objective of the Department of Education (Department) is to provide all school children in Northern Ireland with strong basic skills in literacy and numeracy. This is based on the recognition that these are life-long skills. For individual pupils, good literacy and numeracy skills are a prerequisite to successful progression through the compulsory years of schooling and in the transition from school to further education and the work force. Poor literacy and numeracy skills can have far-reaching personal, social and economic costs.

2. The Department has made a substantial investment in literacy and numeracy programmes, particularly since 1998 with the introduction of its *Strategy for the Promotion of Literacy and Numeracy in Primary and Secondary Schools* (the Strategy). Since that time a fundamental thrust of educational policy for schools has been to ensure that pupils achieve a series of basic standards in literacy and numeracy as they progress through primary and post-primary education.

3. However, our review found that, in response to this agenda, improving literacy and numeracy standards continues to be a major challenge for schools in Northern Ireland. Whereas pupils' literacy and numeracy proficiency levels compare very favourably with Organisation for Economic Co-operation and Development (OECD) countries, there has been only limited improvement among lower performing pupils in both primary and post-primary sectors, while the performance of boys continues to lag significantly behind that of girls. It is critical that the Department ensures that appropriate and effective literacy and numeracy improvement programmes are maintained for pupils not meeting satisfactory standards and that pupil participation is targeted according to need.

MAIN CONCLUSIONS AND RECOMMENDATIONS

PART 2: On the impact of literacy initiatives on pupil performance

Primary School: Key Stage 1 – Pupils aged 8

4. Drawing on the findings of the Literacy Steering Group, established under the Strategy, we found that the Strategy's target of all children (excluding those with severe Special Educational Needs) meeting the standard Level 2 was unfulfilled. Statistical data for 2004-05 shows that over five per cent of pupils still fail to achieve the standard level of performance. This means that around five per cent or 1,214 pupils in 2004-05 continued to fail to achieve the targeted standard (paragraph 2.5).

Primary School: Key Stage 2 – Pupils aged 11

5. Table 3 shows that there has been a continuing improvement in the literacy performance of pupils at Key Stage 2. While the Strategy's initial target of 80 per cent of pupils achieving the standard Level 4 and above was not achieved, there was a decrease of seven percentage points in the number of children in Northern Ireland achieving less than the standard (an improvement of 21 per cent). Statistical data for 2004-05 shows that the revised target of 76 per cent achieving the standard by 2006 has already been achieved. The Department has now re-established the initial target of 80 per cent for achievement by 2008 (paragraph 2.6).

6. While the proportion of pupils leaving primary school with a score of less than Level 4 has declined over the five years since the implementation of the Strategy, in 2004-05 nearly a quarter (23 per cent) of children – around 2,000 girls and 3,500 boys – still leave the primary sector with literacy skills below the standard Level 4

and are, therefore, likely to struggle with the literacy demands of the post-primary curriculum. At this stage too, the first signs of a difference between the performance of girls and boys are perceptible. Across all the Education and Library Boards (Boards), girls consistently perform at around ten percentage points better than boys. The factors underlying this difference are complex and include a wide variety of interlocking social elements. Nor is the situation unique to Northern Ireland. In England the performance gap between girls and boys at Key Stage 2 is of a similar nature (paragraph 2.8).

Key Stage 3 – Pupils aged 14

7. The revised target that, by 2005-06, 73 per cent of all pupils would achieve Level 5 or above at Key Stage 3 was achieved in 2004-05. However, analysing the literacy performance of post-primary pupils in Northern Ireland is complicated by the fact that, at 11 years of age, school children currently compete for entry into selective grammar schools through the annual Transfer Procedure tests (11+) (paragraphs 2.9 and 2.10).

Grammar schools

8. Almost 2 per cent of grammar school pupils did not meet the Strategy's target of all pupils in this sector achieving the standard level in 2002-03. This has reduced to less than one per cent by 2004-05. The Department told us that it is still of the view that a 100 per cent target for grammar school pupils should be set for achievement at or above Level 5. It noted, however, that allowance needed to be made for the legitimate absence of pupils from assessment (paragraph 2.10).

Secondary schools

9. There has been a continuing improvement in performance since 1998-99, with just under the 60 per cent target of pupils attaining the Level 5 standard in 2001-02. While this figure dipped

slightly in the two succeeding years, the position has been regained in 2004-05 (paragraph 2.11).

10. However, despite the improvement in Key Stage 3 results for post-primary schools, in terms of the number of 14 year olds being tested each year, there remain around 6,000 pupils at risk of leaving school at 16 years of age with a level of literacy below the standard Level 5. Moreover, the headline figures also mask the fact that the gap between the performance of boys and girls has widened compared with the position at Key Stage 2. Across all Boards boys in secondary schools are consistently an alarming 24 percentage points behind girls at the end of Key Stage 3. The Department is aware of the gap in performance and is particularly concerned with the lower performance levels of both boys and girls in the Belfast Board and the fact that the gender gap is 29 percentage points. While acknowledging that there is a much higher incidence of social deprivation in Belfast and while many schools are operating in very difficult circumstances, it agrees that further measures are required to raise standards. A number of interventions and initiatives have been put in place at a Board and individual school level and there is emerging evidence of success. Overall, the performance of boys is on a par with that of pupils in England, while a similar gender gap is highlighted also in the 2003 report by OECD (footnote 1). This shows that in reading literacy, girls scored 33 points higher than boys, a gap which was in keeping with the average for OECD countries as a whole (paragraph 2.12).

11. To assess the effectiveness of an initiative such as the literacy strategy reliably, it is essential to measure and clearly establish the growth in the proficiency of pupils which is due to the impact of the initiatives and whether any improvements following participation in the initiative are sustained. It is acknowledged that it will often be very difficult to prove a direct causal link because other factors and initiatives will influence outcomes but, nevertheless, it is important to gather pupil-level data and track test results for individual pupils across different years. Looking

to the future the Department told us that it is very much aware of the need to develop means of measuring progress at an individual pupil level. This requires the development of a Unique Pupil Number and this work is being addressed as part of the larger E-Schools Project (paragraph 2.15).

PART 3: On the impact of the Strategy on numeracy levels within schools

Primary School: Key Stage 1 – Pupils aged 8

12. The Strategy's target that all children would achieve Level 2 by 2002 has not been met. As with literacy, there remains a level of under-achievement among five per cent of pupils (683 boys and 465 girls). The key movement in proficiency levels is among those who, already achieving the standard, progressed to the next level. It is notable too that, while overall gains have been made, particularly in the year following the implementation of the Strategy, the trends in improvement were already discernible prior to 2001-02. In the absence of more detailed longitudinal data, it remains unclear to what extent the introduction of the Strategy has added value to numeracy proficiency levels at Key Stage 1 (paragraph 3.3).

Primary School: Key Stage 2 – Pupils aged 11

13. At Key Stage 2 there has been a greater improvement in the percentage of children achieving the standard over the period than at Key Stage 1, but the target of 80 per cent by 2004 has still not been reached. This means that 2,840 boys and 2,154 girls failed to achieve the standard Level 4 in 2004-05. The increase in the number achieving the standard has been matched by a similar increase in the percentage of those achieving above the standard Level 4. As with Key Stage 1 data, with limited figures available since the implementation, it is not possible to draw any cause and effect relationship with the Strategy and again the improvement had been happening prior to its implementation (paragraph 3.4).

14. At Key Stage 2 the initial indication of a divergence in performance between boys and girls begins to emerge. While not as marked as the gap in literacy performance, boys have tended to perform around five percentage points less well than girls at Key Stage 2. Performance in England is generally lower, and there is little difference between the performance of boys and girls (paragraph 3.5).

Key Stage 3 – Pupils aged 14

15. The Strategy's initial target was that at Key Stage 3, 85 per cent of children would achieve Level 5 based on all grammar school pupils and 75 per cent of secondary school pupils meeting the standard. Actual performance has lacked any constant pattern and has in fact declined in the period since the implementation of the Strategy. Moreover, in 2003-04 English schools out-performed schools here for the first time. While the revised target of 72 per cent of all children achieving Level 5 was achieved in 2003-04, performance fell back again in 2004-05 and thus pupils' attainment has failed to make substantial progress towards meeting the Strategy's initial target of 85 per cent. However, the Department explained in 2002 that the original targets set were too high and proved to be totally unrealistic as they had been based on insufficient information (paragraph 3.6).

16. Further analysis of the data revealed that the major factor in this shortfall can be linked to the lower performance among secondary schools. There is considerable scope for improvement in this sector where, as with literacy, almost 7,000 of the pupils tested (41 per cent) failed to achieve the standard Level 5 compared with only one per cent in grammar schools. As with literacy, the performance of secondary schools in numeracy reflects a gender divide, however the difference between girls and boys is less marked (paragraph 3.7).

17. On the performance of secondary schools, the Department referred to the fact that, while the school system has faced a period of demographic decline, grammar schools have continued to fill

to capacity. The ability range in grammar schools has, therefore, grown wider since the inception of the Strategy, with a corresponding narrowing effect on the ability range in secondary schools. The Department also pointed out that in some schools, both grammar and secondary, this effect is particularly marked (paragraph 3.8).

PART 4: On the way forward

Strategic Direction

18. Unlike England, where the National Literacy and Numeracy Strategy was developed within a national framework, the implementation of the Northern Ireland Strategy was less prescriptive. The Department told us that it had considered carefully the English Literacy Strategy and considered it too regimented to be appropriate to schools in Northern Ireland. In the early stages of implementing the Strategy in Northern Ireland, Boards took different approaches to the literacy strand of the Strategy. The Department accepts that it should have provided more input from the outset thereby allowing the opportunity for a more defined approach to be modified at later stages when the Strategy had been established. A more consistent approach was taken from the start by the Boards to the numeracy strand of the Strategy which was more coherent in its implementation and in numeracy training and development (paragraph 4.3).

Monitoring and Evaluation

19. In our view, the current approach to continuous improvement in literacy and numeracy could be enhanced. Drawing on guidance from the Office of the First Minister and Deputy First Minister (OFMDFM), the adoption of a more structured evaluation process would ensure stronger links between outcomes and action for further improvement. This would help to provide an evidence base for the teaching practices required to achieve the Strategy's goals. We acknowledge that the Department has been supplying Boards

with performance information for individual schools for several years. Following a review, it introduced a much more detailed statistical pack in June 2005 which included graphical presentation of the Key Stages 2 and 3 performance outcomes of their schools, to facilitate the identification of those schools where intervention might be necessary. It agrees that it is essential that effective use is made of this data by the Department and the Boards in order to inform the design and delivery of appropriate teaching initiatives (paragraph 4.9).

20. The Department has told us that, as part of the process of evaluating the current Strategy, during 2005 the Education and Training Inspectorate (ETI) would carry out a Quality Assurance inspection of the Northern Ireland Numeracy Strategy, and the Raising Achievement Programme which was an integral element of the Northern Ireland Literacy Strategy. This exercise will quality assure the individual reports prepared by the Education and Library Boards. In addition, the quality assurance exercise would identify effective practice and areas for improvement in the Boards' support for the schools. The ETI report will be available by the end of March 2006 and should help to establish a baseline against which improvements in quality can be measured (paragraph 4.10).

Targeting resources according to pupil need

21. Disentangling the relative impact of the various influences on literacy and numeracy achievement is a complex task requiring the application of a range of qualitative and quantitative analyses. We acknowledge the Department's view that there is no single solution to improving literacy and numeracy, nor is it likely that any one method or set of changes would lead to a complete elimination of underachievement in both literacy and numeracy. However, the Department needs to ensure that literacy and numeracy improvement initiatives continue to be underpinned by rigorous research and evaluation methodologies and that it continues to develop appropriate strategies to address areas requiring improvement. We

understand that the Department now plans to review its overall approach to literacy and numeracy. We recommend, therefore, that in doing so it takes account of the evidence available from current research into what works to bring about improvement in schools, in order to ensure that the application of available resources meets the relative learning needs of pupils more effectively. In particular, we consider there is a crucial need to increase the momentum of change which will make teaching practices and approaches more responsive to the needs of pupils and begin to address the long-standing challenges facing schools in terms of literacy and numeracy attainment levels; reducing the disparity between higher and lower achieving pupils; between grammar and secondary school pupils; and ensuring equitable progress for both genders (paragraph 4.16).



Part 1

Improving Literacy and Numeracy in Schools

Introduction

1.1 Children's basic skills in literacy and numeracy are established during the early years of school. Mastery of fundamental literacy and numeracy skills takes place as pupils develop during these years and is the foundation of pupils' progress. Literacy and numeracy skills need to be consolidated by the end of primary school as they are vital in determining pupils' likely success in post primary school, a significant influence on their ability to capitalise on further and higher education, training and work opportunities and a factor in their capacity as adults to participate fully in society.

1.2 The Department of Education (the Department) told us that it fully appreciates the important role of education in opening these opportunities, and in particular noted its importance in addressing social disadvantage and poverty. It told us that there is substantial research which demonstrates the strong relationship between social deprivation and educational outcomes. The percentage of children with a Free School Meals entitlement (a recognised proxy measure for social deprivation) is almost 20 per cent higher than in England; and alongside this a significant number of schools in Northern Ireland have had to contend with issues arising from the civil unrest and its aftermath. The Department is fully aware of the major challenge which raising educational standards therefore presents, but is committed fully to meeting this challenge and playing its part in raising standards, thereby helping to break the cycle of deprivation for learners in Northern Ireland.

1.3 Achieving high standards of literacy and numeracy, therefore, remains a major challenge for Northern Ireland schools and policy makers.

While evidence from international research on educational standards indicates Northern Ireland is amongst the top performing countries, concerns remain regarding the gap between the lowest and highest performing pupils. Evidence gathered by the Organisation for Economic Co-operation and Development (OECD)¹ which looked at the range and distribution of scores of individual 15 year olds in 41 countries showed that, notwithstanding the degree of social deprivation, overall performance in Northern Ireland compared very favourably with most other countries. Although there is a wide variation in performance in mathematical and reading literacy, this variation is narrower than the OECD country average (see Appendix 1).

Framework for the Improvement of Literacy and Numeracy

1.4 In Northern Ireland, the Department of Education (Department), the five education and library boards (Boards), the Council for Catholic Maintained Schools (CCMS) and schools have a responsibility for ensuring that pupils achieve expected literacy and numeracy standards. The Department has ultimate responsibility for the quality of delivery of curriculum provision which includes literacy and numeracy improvement programmes for pupils at risk of not achieving their educational potential. It seeks to achieve this through a planning framework involving target setting at an individual Board level and individual school level (see paragraph 1.8). This is underpinned by a programme of educational interventions and initiatives together with regular monitoring and evaluation. In addition, the Boards provide advice and support to schools on literacy and numeracy initiatives and CCMS provides advice to its schools on effective management. Individual schools are responsible for the effective

¹ *Programme for International Student Assessment*, Organisation for Economic Co-operation and Development, 2003.

use of literacy and numeracy funding through their school development planning process.

Key Stage Assessment and Testing

1.5 Feeding into this structure also is the Council for the Curriculum Examinations and Assessment (CCEA) which is responsible for advising Government on the curriculum and standards for student learning and administering the Key Stage assessment, testing and reporting system. Since 1996-97, with data available from 1997-98, all pupils in Northern Ireland have been assessed in English and mathematics at ages 8 and 11 and assessed and tested in both subjects at age 14. This Key Stage assessment, testing and reporting framework was established by CCEA to assist teachers in establishing a more realistic assessment framework and also to help Government assess how pupils' attainment across Northern Ireland as a whole is progressing at important milestones.

Establishment of Literacy and Numeracy Strategy

1.6 A Strategy for the Promotion of Literacy and Numeracy in Primary and Secondary Schools (the Strategy) was launched by the Department in February 1998 with the aim of expanding and enhancing literacy and numeracy intervention and assessment, in order to raise achievement. The Strategy constitutes the first Province-wide approach to enhancing literacy and numeracy skills in school education. However it is also important to locate it within a wider framework of efforts over the years to overcome educational disadvantage. For instance, the Strategy itself forms part of a more general School Improvement Programme, aimed at improving overall standards in schools. This programme in turn had been preceded by the Raising Schools Standards Initiative which began in 1995 and assisted over 100 schools to focus on literacy and numeracy across the curriculum as one of their key areas for improvement. More specifically, within the literacy strand, the Strategy also overarches a number of existing and new initiatives which have been developed and put in place to remediate under-achievement. For

example, the Reading Recovery programme (see paragraph 4.11 and Appendix 2), which is now part of the Strategy, was originally introduced in 1994 for pupils perceived to be having difficulties with reading and writing at the end of their first year of primary school.

1.7 The literacy initiatives under the Strategy proceeded to implementation but an important action within the Strategy was the initiation of research to develop approaches and materials to support the strategy for numeracy. A numeracy team was established to undertake this; their findings formed the basis of the training programme for key teachers in numeracy which was not initiated in schools until February 2001. In order to raise standards in literacy and numeracy, the Strategy's focus is on:

- helping teachers become more skilled in identifying the specific weaknesses of pupils with literacy problems and in tackling these weaknesses effectively as early as possible;
- the promotion of higher standards across the whole ability range, particularly among boys; and
- underpinning both aspects, the need to recognise, disseminate and build on the valuable lessons learnt from the many examples of good practice in the teaching of English and mathematics, both within Northern Ireland and further afield.

Under the Strategy, two inter-Board Steering Groups were established with representatives from each of the five Boards, CCMS, CCEA, Higher Education Institutions, the Irish Medium sector and schools, to coordinate and devise strategic approaches to literacy and numeracy development. The Department also nominated an inspector on each of the Groups to act as an "assessor" and to advise the Department.

Literacy and Numeracy Targets

1.8 As indicated at paragraph 1.5, since 1996-97, with data available from 1997-98, schools in

Northern Ireland have been required to conduct an end of year assessment of the attainment of all eight year olds (Key Stage 1) and 11 year olds (Key Stage 2) in English and mathematics and to assess and test 14 year olds (Key Stage 3) in both subjects. The outcomes of the assessments are expressed as a scale of eight broad levels of attainment, in which progress by the pupil from one level to the next is expected to take, on average, around two years. A framework of targets covering this assessment and testing process was established under the Strategy. This was headed by a series of targets set by the Department for Northern Ireland as a whole. In the context of these overall targets, each of the Boards sets out annual targets for improvement in literacy and numeracy for its area. In turn, all primary and post-primary schools were required to set challenging but achievable targets for the improvement of their pupils' literacy and numeracy skills and, from September 2005, to include these within their School Development Plans. The Department issues an annual circular to schools setting out comparative performance information, taking account of enrolment levels and free school meals entitlement (as a proxy measure of social deprivation) to facilitate benchmarking and target setting. The Departmental targets were as follows:

- at **Key Stage 1**, by 2002, all pupils, except those with special educational needs which are so severe as to prevent sufficient progress, should be working at Level 2 or above in each subject;
- at **Key Stage 2**, by 2002, 80 per cent of pupils should be working at Level 4 or above in each subject. Following the implementation of the Strategy, the Key Stage 2 target for English was reduced to 77 per cent for 2004 and 76 per cent for 2006. The target for mathematics remained at 80 per cent for 2004 but was reduced to 78 per cent for 2006;
- at **Key Stage 3**, by 2002, 75 per cent of pupils overall should be working at Level 5 or above

in English, and 85 per cent in mathematics. In 2004, the Key Stage 3 targets were also revised down by the Department. By sector, this implied for selective post primary schools (hereinafter referred to as grammar schools), a target of 100 per cent in each subject, and for non grammar schools, a target of 60 per cent in English and 75 per cent in mathematics. The target for English for the entire cohort was reduced to 72 per cent for 2004 and then raised to 73 per cent for 2006. The target for mathematics was also reduced to 72 per cent for 2004 and remained at this standard for 2006. The Department told us that this revision was based on an assessment of trend data over the early years of the Strategy.

1.9 The Strategy document explained that the initial 2002 targets were provisional and based on only one year's incomplete assessment results and in 2002, the Department told the Public Accounts Committee² that these targets had been revised downwards because of this. However, the Committee told the Department that it must recognise that it had lost credibility in the area of target setting in relation to literacy and numeracy which the Committee found worrying because such a substantial number of school children were failing to meet minimum standards. Moreover, the Committee found it unacceptable that some of the original targets had been reset or had their timescales extended and saw it as "vital that the Department establishes credible and realistic targets and sticks with them."

1.10 The Department told us that the original targets were revised when subsequent years' complete data provided it with a firmer basis for target setting and identifying trends. It also told us that it worked on the basis that targets should be challenging but need also to be achievable if they are to be motivational. The Department agreed with the Committee's finding and noted with regret that it had not yet put in place the necessary research on longer term targets to

² Report on Indicators of Educational Performance and Provision, Public Accounts Committee, 10/01/R June 2002, Session 2001-02.

achieve this. It confirmed that it was initiating a review of the School Improvement Programme to be completed in 2006 and will include within this review an evaluation of the current arrangements for target setting together with recommendations for improvement.

Investment in Literacy and Numeracy

1.11 The development of literacy and numeracy is an integral aspect of schooling and therefore consumes an element of all Local Management of Schools budgets. Moreover, between 1995 and 1998, the Raising Schools Standards Initiative targeted some £17 million to the 100 schools involved (see paragraph 1.6), a fair proportion of which would have been to bring about improvement in literacy and numeracy levels. In addition, £40 million has been targeted through specific programmes. Table 1 shows that £13.6 million has been spent in schools as a direct result of the Strategy since its inception in 1998. In addition, almost £10 million has been spent on training as part of the Reading Recovery programme (paragraph 4.11 and Appendix 2) and a further £16 million spent from Executive Programme Funds for the employment of substitutes to release teachers from normal

classroom duties in order to provide Reading Recovery sessions.

Audit Objective

1.12 In 2002, the Department told the Public Accounts Committee that it accepted it was indefensible that around 20 per cent of children who leave school in Northern Ireland after 12 years of compulsory education should be unable to read and write to a standard that would equip them to deal with the demands of adult life. It assured the Committee "...of its earnest intention to deal urgently with the long tail of underachievement in literacy and numeracy."³ Against this background and that of the current Strategy as well as the substantial combined resources made available to address literacy and numeracy in schools, our review focuses on attainment levels among pupils within Northern Ireland schools. Part 2 of the report examines whether proficiency in literacy among schools has improved over time, as measured by Key Stage assessment and testing; Part 3 looks at the impacts on numeracy levels within schools; and Part 4 considers how the current Literacy and Numeracy Strategy should be taken forward.

Table 1: Funding for the Literacy and Numeracy Strategy

Board	Belfast		North Eastern		South Eastern		Southern		Western		TOTAL	
	Literacy £'000	Numeracy* £'000	Literacy £'000	Numeracy £'000	Literacy £'000	Numeracy £'000	Literacy £'000	Numeracy £'000	Literacy £'000	Numeracy £'000	Literacy £'000	Numeracy £'000
1999-00	144	129	272	54	231	49	287	59	222	102	1,156	393
2000-01	177	446	329	196	151	196	259	196	216	196	1,132	1,230
2001-02	237	544	200	165	350	224	251	223	174	284	1,212	1,440
2002-03	186	180	149	363	91	260	178	216	287	265	891	1,284
2003-04	189	258	183	366	184	235	217	376	241	193	1,014	1,428
2004-05	211	233	202	272	217	298	234	271	332	240	1,196	1,314
TOTAL	1,144	1,790	1,335	1,416	1,224	1,262	1,426	1,341	1,472	1,280	6,601	7,089

Source: The Department

* During 1999-00, 2000-01 and 2001-02 the Belfast Board centrally administered and distributed to the other four Boards funding to support inter-Board numeracy initiatives. The Belfast Board's own numeracy funding during these years was £69,000, £196,000 and £244,000 respectively.

³ Report on School Inspection in Northern Ireland, Public Accounts Committee, 1/01/R, September 2001, Session 2001-02.

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Part 2

Impact of Literacy Initiatives on Pupil Performance

Background

2.1 The National Literacy and Numeracy Strategy (for primary schools only), which began in England in 1998 introduced a systematic and practical approach to the teaching of English which was underpinned by a recommended daily entitlement of time. By contrast the Department, taking evidence-based advice from the Education and Training Inspectorate (ETI), took the view that the insufficient allocation of time for English and mathematics was not an issue for schools in Northern Ireland. Furthermore, since the School Improvement Programme included the School Support Programme which was designed to address issues of under-performance in schools, there were no compelling reasons to introduce a similar highly structured teaching approach locally. The Department also took into account the selective nature of Northern Ireland's post-primary education system. As a result, the Strategy required each individual Board "to establish their policies for the promotion of literacy and numeracy in their area, including the setting of targets for improvement."

2.2 The literacy strategy acknowledged the central importance of efficient and effective management of learning in improving literacy standards within schools. It also involved the preparation of school policies for literacy, the appointment of literacy co-ordinators and a strand of support mechanisms provided by the Boards. In this way it impacted on all schools. To support implementation, a key element of the strategy included management training for literacy co-ordinators and senior management teams, along with training for groups of teachers and whole staff groups. This management training embraced auditing, baselining, target setting, action planning,

monitoring and evaluation, policy development and also the school's policy for literacy across the curriculum.

2.3 Implementation of this element of the Strategy commenced with formal training for the first cohort of schools in 1998 and 1999. Subsequent cohorts of schools followed each year, embarking on the same or a similar programme of professional development. Schools were involved in literacy training for a three-year period. Each Board continued to enlist an additional cohort of schools each year until 2002. This led to the existence of four or five cohorts, depending on the time of entry into the literacy strategy.

2.4 During 2001-02 concerns were raised by the Department and ETI about the direction being taken within the Strategy particularly with the literacy strand. As a result, in May 2002, a review was initiated by the Literacy Steering Group which resulted in the introduction of the Raising Achievement Programme in 2003 to focus on the lowest achievers. This was aimed at the development of a more collaborative approach across the Boards to improving the targeting and tailoring of support for schools and individual teachers. In November 2004 the Literacy Steering Group produced an evaluation⁴ of progress so far on the implementation of the literacy strategy. The evaluation drew on the views and Key Stage results of the 406 primary schools and 109 post-primary schools that comprised the first two cohorts of schools participating in the Strategy. These schools had participated in the training because they had identified specific needs in this area at school and individual teacher level that would result in sustainable improvement in pupils' performance over time. At the time of the evaluation most had completed the structured three-year training

⁴ An Evaluation of the Northern Ireland Literacy Strategy 1998-02, J Purdy, 2004.

programme (31 per cent of primary schools and 47 per cent of secondary schools responded to the postal survey). The evaluation provided a comparison of average attainment levels of cohort schools over time against all schools in the primary or post-primary sectors.

Primary School: Key Stage 1 – Pupils aged 8

2.5 Drawing on the findings of the Steering Group, Table 2 compares the percentage of Key Stage 1 pupils within schools who joined the scheme and achieved Level 2 with that for all Key Stage 1 pupils between 1998-99 and 2002-03. The Table shows that the Strategy's target of all children (excluding those with severe Special Educational Needs) meeting the standard was unfulfilled and that there was little difference in the progress made

by schools in the first two cohorts and Northern Ireland as a whole. Due to industrial action by teachers, no assessment data is available for 2003-04. However, statistical data for 2004-05 shows that over five per cent of pupils still fail to achieve the standard level of performance. The Table also shows that, generally, among those achieving the standard, there has been a steady shift in numbers from Level 2 to the higher Level 3. At the same time, the statistics also indicate that there has been only a relatively small decrease in the number of pupils failing to achieve Level 2, with around five per cent or 1,214 pupils continuing to fail to achieve the targeted standard in 2004-05. It is these pupils who are most in need of additional assistance, and according to the evaluation, "...teachers interviewed felt that the teaching strategies promoted through the literacy strategy were less effective for (these) lower achieving children."

Table 2: Percentage of Pupils Achieving Various Levels at Key Stage 1 English

	Cohorts 1 and 2			Northern Ireland			
	<2	2	3	<2	2	3	Level 2 and above
1998-99	5.84	62.57	31.59	6.12	61.28	32.61	93.89
1999-00	5.24	61.52	33.24	5.48	61.13	33.39	94.52
2000-01	5.00	58.94	36.06	5.14	59.33	35.48	94.81
2001-02	5.38	58.07	36.55	5.44	58.06	36.51	94.57
2002-03	5.33	57.06	37.61	5.28	56.62	38.10	94.72
+/-	-0.51	-5.51	+6.02	-0.84	-4.66	+5.49	+0.83
2003-04	n/a	n/a	n/a	*	*	*	*
2004-05	n/a	n/a	n/a	5.13	56.98	37.88	94.87

Source: The Literacy Steering Group/Department

Notes:

n/a: cohort data was only collected for the period of the Literacy Steering Group's evaluation exercise, 1998-99 to 2002-03.

* Due to industrial action assessment data is not available for 2003-04.

Table 3: Percentage of Pupils Achieving Various Levels at Key Stage 2 English

	Cohorts 1 and 2			Northern Ireland			
	<4	4	5	<4	4	5	Level 4 and above
1998-99	29.75	52.84	17.41	31.00	51.48	17.52	69.00
1999-00	27.68	53.93	18.39	28.52	52.84	18.63	71.47
2000-01	26.16	54.58	19.26	27.19	52.99	19.82	72.81
2001-02	24.67	54.81	20.52	26.13	53.06	20.81	73.87
2002-03	23.73	54.12	22.16	24.44	53.49	22.07	75.56
+/-	-6.02	+1.28	+4.75	-6.56	+2.01	+4.55	+6.56
2003-04	n/a	n/a	n/a	*	*	*	*
2004-05	n/a	n/a	n/a	23.38	53.42	23.19	76.62

Source: The Literacy Steering Group/Department

Notes:

n/a: cohort data was only collected for the period of the Literacy Steering Group's evaluation exercise, 1998-99 to 2002-03.

* Due to industrial action assessment data is not available for 2003-04.

Primary schools: Key Stage 2 – Pupils aged 11

2.6 Table 3 shows that there has been a continuing improvement in the literacy performance of pupils at Key Stage 2. While the Strategy's initial target of 80 per cent of pupils achieving Level 4 and above was not achieved, there was a decrease of seven percentage points in the number of children in Northern Ireland achieving less than the standard (an improvement of 21 per cent). Statistical data for 2004-05 shows that the revised target of 76 per cent achieving the standard by 2006 has already been achieved. The Department has now re-established the initial target of 80 per cent for achievement by 2008.

2.7 It is interesting to observe from Table 3 that, for Northern Ireland as a whole, the improvement was slightly more pronounced than among the cohort 1 and 2 schools which participated in the training (see paragraph 2.2),

while overall improvement gains between 1998-99 and 2002-03 were almost the same. We asked the Department for its assessment of why schools taking up the training element of the Strategy had made no more rapid improvement than those not doing so. It told us that schools participating in the training provided under the Strategy did so because they had identified specific needs in this area and considered the fact that, in overall terms, these schools had kept pace with other schools at this Key Stage as a reflection of the success of that training. However, it added that the training had taken the form of support designed to build capacity at school and individual teacher level that would result in sustainable improvement in pupils' performance over time, rather than short-term "teach-to-the-test" type improvement in scores. As such, the Department expected that it would take more than two years for change to embed and the effects of the training to become fully apparent in pupils' improved performance.

Table 4: Gender split in performance of boys and girls achieving Level 4 or above in English at Key Stage 2 - 2004-05

Board	Boys %	Girls %	Total %
Belfast	61.2	74.9	68.3
South Eastern	76.0	84.9	80.4
North Eastern	71.8	84.0	77.9
Southern	72.1	86.1	79.0
Western	69.5	80.9	75.2
Northern Ireland	70.7	82.6	76.6
England	70	81	75

Source: Department/Department for Education and Skills

2.8 While the proportion of pupils leaving primary school with a score of less than Level 4 has declined over the five years since the implementation of the Strategy, in 2004-05 nearly a quarter (23 per cent) of children – around 2,000 girls and 3,500 boys – still leave the primary sector with literacy skills under the standard Level 4 and are therefore likely to struggle with the literacy demands of the post-primary curriculum. At this stage too, the first signs of a difference between the performance of girls and boys are perceptible. As Table 4 demonstrates, across all the Boards girls consistently perform at around ten percentage points better than boys. The factors underlying this difference are complex and include a wide variety of interlocking social elements. Nor is the situation unique to Northern Ireland. In England, the performance gap between girls and boys at Key Stage 2 is of a similar nature.

Key Stage 3 – Pupils aged 14

2.9 Paragraph 2.8 indicated that a significant number of pupils leaving primary school are at risk of not improving or falling behind the achievement levels of their peers. Despite this, the 2003 OECD report (paragraph 1.3) indicated that, among 15 year olds, pupils in only three of 41 participating

countries (Finland, Korea and Canada) had a significantly better mean score in reading literacy than Northern Ireland. The revised target that, by 2005-06, 73 per cent of all pupils in Northern Ireland would achieve Level 5 or above at Key Stage 3 was achieved in 2004-05 (Table 5).

Table 5: Percentage of all pupils achieving Level 5 or above at Key Stage 3 English

	% Achieving Level 5 and above
1998-99	68
1999-00	69
2000-01	72
2001-02	73
2002-03	72
2003-04	72
2004-05	73

Source: Department

Grammar Schools

2.10 However, analysing the literacy performance of post-primary pupils in Northern Ireland is complicated by the fact that at 11 years of age school children currently compete for entry into selective grammar schools through the annual Transfer Procedure tests (11+). As would be expected, the performance of these grammar schools at Key Stage 3 remains at a considerably higher level than that of secondary schools, although as Table 6 shows, almost 2 per cent of grammar school pupils did not meet the Strategy's target of all pupils in this sector achieving the standard level in 2002-03. This has reduced to less than one per cent by 2004-05. The Department told us that it is still of the view that a 100 per cent target for grammar school pupils should be set for achievement at or above Level 5. It noted however that allowance needed to be made for the legitimate

absence of pupils from assessment (for example, in the past two years between 2.1 per cent and 2.6 per cent of pupils have been absent for Key Stage 3 tests in English or mathematics). Another particular feature of Table 6 is the significant movement of higher attaining pupils from Levels 5 and 6 to the highest banding 7.

Secondary Schools

2.11 Table 7 indicates that particularly for cohort one and two schools and Northern Ireland as a whole, there has been a continuing improvement in performance since 1998-99, with just under the 60 per cent target of pupils attaining the Level 5 standard in 2001-02. Figures for Northern Ireland show that while this figure dipped slightly in the two succeeding years the position has been regained in 2004-05.

Table 6: Percentage of grammar school pupils achieving various levels at Key Stage 3 English

	Cohorts 1 and 2				Northern Ireland				
	<5	5	6	7	<5	5	6	7	≥ Level 5
1998-99	2.36	20.04	50.80	26.08	2.23	15.04	44.55	37.32	96.91
1999-00	2.70	21.29	48.38	27.49	1.48	12.60	45.98	39.17	97.75
2000-01	1.62	16.10	44.75	37.02	1.08	11.58	45.50	41.13	98.21
2001-02	1.16	10.59	44.76	42.73	1.29	10.25	43.14	44.56	97.95
2002-03	0.47	8.83	48.30	41.94	1.88	8.76	44.38	44.25	97.39
+/-	-1.89	-11.21	-2.50	+15.86	-0.35	-6.28	-0.17	+6.93	+0.48
2003-04	n/a	n/a	n/a	n/a	1.08	11.20	40.49	46.42	98.11*
2004-05	n/a	n/a	n/a	n/a	0.93	12.25	39.57	46.23	98.04

Source: The Literacy Steering Group/Department

Notes:

n/a: cohort data was only collected for the period of the Literacy Steering Group's evaluation exercise, 1998-99 to 2002-03.

* Due to industrial action Key Stage 3 test data is not available for a small number of schools.

Table 7: Percentage of secondary school pupils achieving various levels at Key Stage 3 English

	Cohorts 1 and 2				Northern Ireland				
	<5	5	6	7	<5	5	6	7	≥ Level 5
1998-99	44.32	30.99	16.82	4.47	44.39	31.50	16.52	4.31	52.33
1999-00	42.87	30.21	18.32	4.97	43.00	31.27	18.16	3.97	53.40
2000-01	40.00	32.70	19.11	5.71	39.54	34.15	18.99	4.75	57.89
2001-02	39.12	32.63	20.24	4.91	37.31	33.29	21.44	4.94	59.67
2002-03	37.86	34.79	19.55	4.96	38.56	35.02	18.79	4.67	58.48
+/-	-6.46	+3.80	+2.73	+0.49	-5.83	+3.52	+2.27	+0.36	+6.15
2003-04	n/a	n/a	n/a	n/a	39.00	35.86	17.05	4.43	57.34*
2004-05	n/a	n/a	n/a	n/a	36.83	34.18	18.51	7.01	59.70

Source: The Literacy Steering Group/Department

Notes:

n/a: cohort data was only collected for the period of the Literacy Steering Group's evaluation exercise, 1998-99 to 2002-03.

* Due to industrial action Key Stage 3 test data is not available for a small number of schools.

2.12 However, despite the improvement in Key Stage 3 results for post-primary schools, in terms of the number of 14 year olds being tested each year there remain around 6,000 pupils at risk of leaving school at 16 years of age with a level of literacy below the standard Level 5. Moreover, the headline figures also mask the fact that the gap between the performance of boys and girls has widened compared with the position at Key Stage 2. Table 8 demonstrates that across all Boards boys in secondary schools are consistently an alarming 24 percentage points behind girls at the end of Key Stage 3. The Department is aware of the gap in performance and is particularly concerned with the lower performance levels of both boys and girls in the Belfast Board and the fact that the gender gap is 29 percentage points. While acknowledging that there is a much higher incidence of social deprivation in Belfast and while many schools are operating in very difficult circumstances,

it agrees that further measures are required to raise standards. A number of interventions and initiatives have been put in place at a Board and individual school level and there is emerging evidence of success. Overall the performance of boys is on a par with that of pupils in England, while a similar gender gap is highlighted also in the 2003 report by OECD (footnote 1). This shows that in reading literacy, girls scored 33 points higher than boys, a gap which was in keeping with the average for OECD countries as a whole.

Table 8: Gender split in performance of boys and girls attending secondary schools achieving Level 5 or above at Key Stage 3 English 2004-05

Board	Boys %	Girls %	Total %
Belfast	33.2	62.3	48.5
South Eastern	49.2	68.5	58.3
North Eastern	49.3	75.3	61.4
Southern	55.3	80.7	67.5
Western	46.4	69.7	57.6
Northern Ireland (secondary)	48.0	72.2	59.7
Northern Ireland (all post-primary schools)	64.9	82.0	73.3

Source: Department

Evaluation Methodology – General Conclusion

2.13 Ensuring that the literacy strategy effectively meets the needs of pupils also demands precision in identifying and evaluating the impact its interventions have on individual pupils and the interventions' cost-effectiveness. The evaluation methodology used by the Literacy Steering Group included a teacher questionnaire, interviews and the analysis of Key Stage results. However, in January 2005, a review of literacy-related initiatives by the National Foundation for Educational Research⁵ (commissioned by CCEA) concluded that as this evaluation "... was mainly qualitative in nature, with sample sizes that did not enable a particularly robust analysis...caution should be used when giving weight to any conclusions." Moreover, the review points to the lack of a meaningful comparison group with which to compare the outcomes of those schools engaging in the initiative so as to provide a reasonable estimate of the effect of the Strategy. The Department told us that, given that all schools followed the Strategy,

it would have been impossible to construct a comparator group. Furthermore, the creation of such a group would have denied some schools the potential benefits of the Strategy. In addition it points out that it is difficult to demonstrate a direct causal link between a specific intervention and improved performance, when other influences on performance such as leadership, teaching quality, inspection and initiatives such as the School Support Programme, Reading Recovery, Development and Dissemination of Good Practice may also be contributing to raising standards. However, this has meant that the positive effects of the Strategy are largely indeterminable.

2.14 In addition, while the collection of Key Stage data on literacy and numeracy levels provides a snapshot of the overall performance of pupils, the collection of aggregate data does not allow the examination of performance at the individual pupil level. All Boards and the Department have performance data at individual school level which includes Key Stage Assessment scores. Thus it is possible to study trends within individual

⁵ A review of literacy initiatives to inform advice on the Foundation Stage, National Foundation for Educational Research, January 2005 (unpublished).

schools and examine differences between schools, particularly those with similar Free School Meals entitlement percentages. Where the performance of a school suggests that some form of intervention may be appropriate, the Board (and CCMS where the school is a Catholic maintained school) will discuss this with the school and in the course of doing so will usually review performance at an individual pupil level. The computerised administration system in schools (known as C2K) already provides facilities for the recording of individual pupil performance and this is then available for analysis within the school to identify those pupils requiring support.

Pupil - level data is essential

2.15 To assess the effectiveness of an initiative such as the literacy strategy, it is essential to measure and clearly establish the growth in the proficiency of pupils which is due to the impact of the initiative, and whether any improvements following participation in the initiative are sustained. It is acknowledged that it will often be very difficult to prove a direct causal link because other factors and initiatives will influence outcomes but nevertheless it is important to gather pupil-level data and track test results for individual pupils across different years. Looking to the future the Department told us that it is very much aware of the need to develop means of measuring progress at an individual pupil level. This requires the development of a Unique Pupil Number and this work is being addressed as part of the larger E-Schools Project. The E-Schools Project involves the establishment of a data warehouse which will allow for the integration and co-ordination of data from a wide range of management information systems throughout the education sector, including C2K.

$$1 \times 9 = 9$$

$$2 \times 9 = 18$$

$$3 \times 9 = 27$$

$$4 \times 9 = 36$$

$$5 \times 9 = 45$$

$$6 \times 9 = 54$$

$$7 \times 9 = 63$$

$$8 \times 9 = 72$$

$$9 \times 9 = 81$$

$$10 \times 9 = 90$$

$$11 \times 9 = 99$$

$$12 \times 9 = 108$$

Part 3

Impact of the Strategy on Numeracy Levels Within Schools

Background

3.1 The Department told us that the rationale for developing a Numeracy Strategy was based upon weaknesses in the management and co-ordination of numeracy within schools, reported by ETI. In addition, it had also identified the need for improvement in pupils' attitudes towards numeracy and the effectiveness of the teaching and learning approaches adopted. Paragraph 1.7 notes that the training element of the Strategy was not officially launched in schools until February 2001, following research to develop approaches and materials to support the Strategy. It is more difficult, therefore, to gauge the potential impact of the Strategy on attainment levels given the relatively short time the intervention has been in place.

3.2 Unlike the Literacy evaluation, the Numeracy Steering Group⁶ adopted a "self-evaluation" approach based on the professional assessment by teachers rather than examining the attainment levels of comparable groups of schools. The view of ETI is that the Numeracy Strategy has successfully addressed the areas of concern and has effected improvements in the management and co-ordination of numeracy, and in the quality of teaching and learning within schools throughout Northern Ireland. In view of this, we examined Key Stage data on numeracy attainment levels across the same time span as the Literacy Strategy in order to get some measure of performance before and after the implementation of the Strategy commenced.

Primary Schools: Key Stage 1 – Pupils aged 8

3.3 The data presented in Table 9 shows that the Strategy's target that all children would achieve

Level 2 by 2002 has not been met. As with literacy, there remains a level of under-achievement among five per cent of pupils (683 boys and 465 girls). The Table also demonstrates that the key movement in proficiency levels over the period is among those who, already achieving the standard, progressed to the next level. It is notable too that, while overall gains have been made, particularly in the year following the implementation of the Strategy, the trends in improvement were already discernible prior to 2001-02. In the absence of more detailed longitudinal data, it remains unclear to what extent the introduction of the Strategy has added value to numeracy proficiency levels at Key Stage 1.

Table 9: Percentage of pupils achieving various levels at Key Stage 1 Maths

Year	<2	2	3	Total ≥2
1998-99	6.0	57.2	36.8	94.0
1999-00	5.2	55.7	39.1	94.8
2000-01	4.9	52.7	42.4	95.1
2001-02	5.1	52.2	42.8	95.0
2002-03	4.8	50.1	45.1	95.2
2003-04	n/a	n/a	n/a	n/a
2004-05	4.8	50.3	44.9	95.2
+/-	-1.2	-6.9	+8.1	+1.2

Source: Department

n/a: Due to industrial action by teachers, no assessment data is available for 2003-04.

6 Self-Evaluation of the Northern Ireland Numeracy Strategy, Northern Ireland Numeracy Steering Group, December 2004.

Primary Schools: Key Stage 2 – Pupils aged 11

3.4 Table 10 shows that at Key Stage 2 there has been a greater improvement in the percentage of children achieving the standard over the period than at Key Stage 1, but the target of 80 per cent by 2004 has still not been reached. This means that 2,840 boys and 2,154 girls failed to achieve the standard Level 4 in 2004-05. The increase in the number achieving the standard has been matched by a similar increase in the percentage of those achieving above the standard Level 4. As with Key Stage 1 data, with limited figures available since the implementation, it is not possible to draw any cause and effect relationship with the Strategy and again the improvement had been happening prior to its implementation.

Table 10: Percentage of pupils achieving various levels at Key Stage 2 Maths

Year	<4	4	5	Total ≥4
1998-99	26.1	39.0	34.9	73.9
1999-00	24.6	38.5	37.0	75.5
2000-01	24.3	38.0	37.7	75.7
2001-02	23.0	38.9	38.1	77.0
2002-03	21.8	38.4	39.8	78.2
2003-04	n/a	n/a	n/a	n/a
2004-05	21.0	38.9	40.1	79.0
+/-	-5.1	-0.1	+5.2	+5.1

Source: Department

n/a: Due to industrial action by teachers, no assessment data is available for 2003-04.

3.5 At Key Stage 2 the initial indication of a divergence in performance between boys and girls begins to emerge. While not as marked as the gap in literacy performance (paragraph 2.8), Table 11 shows that boys have tended to perform around five percentage points less well than girls at Key Stage 2. It also shows, by comparison, that performance in England is generally lower and that boys actually perform slightly better than girls at this Stage.

Key Stage 3 – Pupils aged 14

3.6 The Strategy's initial target was that at Key Stage 3, 85 per cent of children would achieve Level 5 based on all grammar school pupils and 75 per cent of secondary school pupils meeting the standard. As Table 12 shows, actual performance has lacked any constant pattern and has in fact declined in the period since the implementation of the Strategy. Moreover, in 2003-04 English schools out-performed schools here for the first time. While the revised target of 72 per cent of all children achieving Level 5 was achieved in 2003-04, performance fell back again in 2004-05 and thus pupils' attainment has failed to make substantial progress towards meeting the Strategy's initial target of 85 per cent. However, the Department explained in 2002 that the original targets set were too high and proved to be totally unrealistic as they had been based on insufficient information (see paragraph 1.9).

Table 11: Gender split in performance of boys and girls achieving Level 4 or above at Key Stage 2 Maths

Year	Northern Ireland			England		
	Boys %	Girls %	Total %	Boys %	Girls %	Total %
1998-99	71.2	76.7	73.9	69	70	69
1999-00	72.6	78.4	75.4	71	73	72
2000-01	72.9	78.5	75.7	73	74	74
2001-02	74.3	79.8	77.0	74	75	74
2002-03	75.5	81.0	78.2	74	75	74
2003-04	n/a	n/a	n/a	75	75	75
2004-05	76.2	81.8	79.0	76	76	76
+/-	+5.0	+5.1	+5.1	+7	+6	+7

Source: Department/Department for Education and Skills

n/a: Due to industrial action by teachers, no assessment data is available for 2003-04.

Table 12: Percentage of pupils achieving various levels at Key Stage 3 Maths

Year	<5	5	6>	Total ≥5
1998-99	28.0	24.2	45.9	70.1
1999-00	30.5	20.6	46.4	67.0
2000-01	29.3	22.5	46.4	68.9
2001-02	24.9	26.6	46.6	73.2
2002-03	29.3	24.1	46.5	70.6
2003-04	25.5	25.4	47.0	72.4*
2004-05	26.9	24.8	46.2	71.0
+/-	-1.1	+0.6	+0.3	+0.9

Source: Department

* Due to industrial action, Key Stage 3 data is not available for a small number of schools

Table 13: Gender split of proportions of grammar and secondary school pupils achieving Level 5 or above at Key Stage 3 Maths

Year	Grammar		Secondary		Total %
	Boys %	Girls %	Boys %	Girls %	
1998-99	98.6	98.5	52.3	58.4	70.1
1999-00	98.6	98.5	46.9	54.4	67.0
2000-01	98.5	97.9	50.9	56.2	68.9
2001-02	98.5	98.7	57.1	62.5	73.1
2002-03	97.9	98.6	53.9	57.6	70.7
2003-04	98.4	98.3	55.2	60.5	72.3*
2004-05	97.6	97.8	52.6	60.3	71.0

Source: Department

* Due to industrial action, Key Stage 3 data is not available for a small number of schools

3.7 Further analysis of the data revealed that the major factor in this shortfall can be linked to the lower performance among secondary schools. There is considerable scope for improvement in this sector where, as with literacy (paragraph 2.12), almost 7,000 of the pupils tested (41 per cent) failed to achieve the standard compared with only one per cent in grammar schools. As with literacy, the performance of secondary schools in numeracy reflects a gender divide. However, Table 13 shows that the difference between girls and boys is less marked.

3.8 On the performance of secondary schools, the Department referred to the fact that, while the school system has faced a period of demographic decline, grammar schools have continued to fill to capacity. The ability range in grammar schools has, therefore, grown wider since the inception of the Strategy, with a corresponding narrowing effect on the ability range in secondary schools. The Department also pointed out that in some schools, both grammar and secondary, this effect is particularly marked.

3.9 As with performance in literacy, it is useful also to place the numeracy performance of Key Stage 3 pupils in Northern Ireland in a broader context. For instance the OECD report in 2003 records that there were only six countries out of the 41 participating, in which pupil achievement on its mathematical scale was significantly better than Northern Ireland. Moreover, unlike literacy, the difference in achievement between the most able and least able pupils in Northern Ireland was less than the average observed for most other OECD countries.

A a

$$1 + 1 = 2$$

$$2 + 2 = 4$$

B b

C c

$$1 \times 1 = 1$$

$$2 \times 2 = 4$$



Part 4

The Way Forward

Introduction

4.1 While there have been some improvements in English and mathematics attainment levels, the pattern of literacy and numeracy performance to date continues to exhibit similar deficiencies to those highlighted by PAC (paragraphs 1.9 and 1.12). Despite the additional funding directed towards literacy and numeracy, significant numbers of children, particularly in secondary schools, fail to reach the appropriate level of attainment. None of the targets set by the Department in 1998 have been met and the situation has been further complicated by the decision to lower some targets and extend the timescale for their achievement (paragraph 1.8). However, the Department point out (paragraph 1.10) that targets were revised when firmer performance data had become available. A key feature of the data presented in Parts 2 and 3 is that literacy and numeracy skills are not evenly distributed among the school population, with a continuing wide gap between low achievers and high achievers as well as the diverging performance of boys and girls at Key Stages 2 and 3. The proportion of pupils failing to achieve the standard level of proficiency in literacy and numeracy also increases over the three Key Stages, demonstrating that tackling inequality among pupils becomes more challenging as they progress through the school system.

4.2 We recognise that these problems are not unique to Northern Ireland. However, in the Department's view (paragraph 1.2), under-achievement in literacy and numeracy in Northern Ireland has to be considered in the context of significant levels of social deprivation. It is against this background that it told us it is engaged in a major programme of reform. The Review of Post-Primary Education will remove academic selection at the age of 11 and a new curriculum will impact on learning and teaching in the classroom. According to the Department, both of these have the potential to make a positive impact on standards of literacy and numeracy.

Strategic Direction

4.3 Unlike England, where the National Literacy and Numeracy Strategy was developed within a national framework, the implementation of the Northern Ireland Strategy was less prescriptive. The Department told us that it had considered carefully the English Literacy Strategy and considered it too regimented to be appropriate to schools in Northern Ireland (see paragraph 2.1). In the early stages of implementing the Strategy in Northern Ireland, Boards took different approaches to the literacy strand of the Strategy. We acknowledge that as a result of a review of the Literacy Strategy in 2003 (paragraph 2.4), steps were taken to improve the coherence of the Literacy Strategy and to enhance the targeting and tailoring of in-service training for teachers. A five-Board Early Years Literacy Group now advises CCEA and produces the guidance material for the literacy programme in the Foundation Stage and Key Stage 1. While we acknowledge that a one-size-fits-all approach to teaching may constrain initiative, given the ambitious scope of the changes intended in the Strategy, the Department accepts that it should have had input from the outset thereby allowing the opportunity for a more defined approach to be modified at later stages when the Strategy had been established. A more consistent approach was taken from the start by the Boards to the numeracy strand of the Strategy which was more coherent in its implementation, and in numeracy training and development.

4.4 While greater central direction and a more coherent approach to literacy and numeracy programmes can provide for a good start, they are not of themselves sufficient to guarantee that pupil learning outcomes will improve. The data in Parts 2 and 3 demonstrate that more improvement in literacy and numeracy attainment levels is still required. There are many factors that impinge on pupil learning in addition to the basic premise under which the Strategy operates and how well it is implemented. Continued monitoring and

evaluation of the success of the Strategy is needed to ensure that it is effectively and efficiently fulfilling its intended purpose.

Monitoring and Evaluation

4.5 In line with the goals and targets set in the Department's Strategy, one of its key priorities is ensuring continued improvement in literacy and numeracy standards. Indeed, central to the accountability for the literacy and numeracy Strategy is the establishment of processes to ensure that data and evidence on the outcomes of the Strategy are monitored, reported, evaluated and used for planning and continuous improvement. This reflects recent guidance from the Office of the First Minister and Deputy First Minister (OFMDFM)⁷ which advises that "systematic assessment of policies, programmes and projects helps to improve the design and delivery of current and future policies. It also reinforces the use of evidence in policy-making by helping policy makers find out what works".

4.6 The Department monitors the Boards' literacy and numeracy targets on an ongoing basis through their spending priorities. Under the Strategy, each Board is also required to produce an annual self-evaluation/monitoring report on progress towards meeting its annual targets for improvements. This process takes greater account of both qualitative and quantitative data and is overseen by the two Steering Groups (see paragraph 1.6), while ETI produces written comments on the reports for the Department and provides oral feedback to each Board.

4.7 We found that, while the Boards complied with their responsibility to produce such reports, there was a large degree of variability across the Boards in the clarity of reports and the quality of interpretation of performance data. The Department had similar concerns based on findings from ETI indicating inconsistencies in the level of analytical information provided in the reports. As a

result, we welcome the fact that during 2004-05 the Department provided the Boards with a standard format to be followed in preparing future reports, including the provision of performance data and monitoring arrangements to ensure compliance.

4.8 In addition to annual self-evaluation by the Boards, in 2004 the two individual Steering Groups carried out overall evaluations of the Strategy's progress so far. Both of these claimed that a measure of the successful implementation of the Strategy is reflected in the improvements that have been established in the leadership, management and co-ordination of literacy and numeracy within schools. Both evaluations also report the views of schools that the Strategy has had a beneficial impact on the standard of teaching and learning outcomes. However, the data presented in Parts 2 and 3 of this report show that there are still areas of poor performance in literacy and numeracy which indicate that much work is still required to meet this challenge.

4.9 In our view, the current approach to continuous improvement in literacy and numeracy could be enhanced. Drawing on OFMDFM guidance (paragraph 4.5), the adoption of a more structured evaluation process would ensure stronger links between outcomes and action for further improvement. This would help to provide an evidence base for the teaching practices required to achieve the Strategy's goals. We acknowledge that the Department has been supplying Boards with performance information for individual schools for several years. Following a review, it introduced a much more detailed statistical pack in June 2005 which included graphical presentation of the Key Stages 2 and 3 performance outcomes of their schools, to facilitate the identification of those schools where intervention might be necessary. It agrees that it is essential that effective use is made of this data by the Department and the Boards in order to inform the design and delivery of appropriate teaching initiatives.

⁷ A Practical Guide to Policy Making in Northern Ireland, OFMDFM, 2003.

4.10 The Department has told us that as part of the process of evaluating the current Strategy, during 2005 ETI carried out a Quality Assurance inspection of the Northern Ireland Numeracy Strategy, and the Raising Achievement Programme which was an integral element of the Northern Ireland Literacy Strategy. This exercise will quality assure the individual reports prepared by the Boards. In addition, the quality assurance exercise will identify effective practice and areas for improvement in the Boards' support for schools. The ETI report will be available by the end of March 2006 and should help to establish a baseline against which improvements in quality can be measured.

Targeting resources according to pupil need

4.11 We acknowledge that the Department has targeted funding towards literacy and numeracy through such initiatives as the Reading Recovery Programme and the Summer Literacy and Numeracy Programmes. We recognise that funding has been directed at those schools with the highest levels of need through the Targeting Social Need factor within the formula for funding schools. However in the first years of the implementation of the Strategy, the substantial resources and programmes aimed at literacy and numeracy were not targeted as effectively as they could have been. Until the introduction of the Raising Achievement Programme in 2003, resources were directed towards pupils in a largely undifferentiated way and, in our view, were unlikely to achieve the greatest effect in raising standards. This has also been recognized by the Numeracy Steering Group which has called for targeted support for schools with low attainment levels in mathematics.

4.12 We agree with the Department that in order to achieve the greatest effect in raising standards, it is essential that literacy and numeracy initiatives should continue to refine and build

on the approach developed within the Raising Achievement Programme and focus as accurately as possible on those pupils who need them most. The Boards and schools must ensure that they take a broad view of low and under-achieving pupils and direct resources as profitably as possible to raising their attainment. This will involve ongoing efforts to identify these pupils more accurately and focus specifically on exactly what the pupils need to learn and how they need to learn. For instance, the data on literacy and numeracy levels at Key Stages 2 and 3 demonstrate that there is a marked gender gap, with boys trailing behind the performance of girls by a progressively widening distance, particularly in the secondary school sector. While a gender gap in educational achievement is common in most OECD countries (paragraph 2.12), the Department agrees this is an area where intervention should be given even greater focus.

4.13 By understanding and explaining variations in the performance of pupils, it should be possible to develop and design school programmes that are more successful in addressing the different influences on achievement. In our view, this requires greater attention to research and accumulated knowledge and evidence about which interventions work, under which conditions and whether they provide value for money. For instance, the Department is currently funding research into the effectiveness of pre-school provision, which includes its impact on literacy and numeracy up to the end of Key Stage 1. We note the evaluation⁸ of an Early Years Enriched Curriculum pilot programme (see Appendix 3) devised jointly by CCEA and the Belfast Education and Library Board which suggests that this approach, which calls for a higher ratio of classroom assistants to pupils, can mitigate the effects of social disadvantage on literacy. ETI also report⁹ that teachers involved in this initiative had evidence to support and illustrate children's progress and development in literacy and numeracy.

8 The Early Years Enriched Curriculum Evaluation Project: Final Report, L Sproule et al, School of Psychology, Queen's University Belfast and Stranmillis University College, September 2004.

9 Report of a Survey of the Early Years Enriched Curriculum Pilot, Education and Training Inspectorate, Department of Education, November 2004.

4.14 In the United Kingdom, research findings¹⁰ have also shown that children who ranked in the top 25 per cent in terms of ability at 22 months, were three times more likely to gain advanced educational qualifications. It may be sensible, therefore, to focus resources more on early years education to help children acquire literacy and numeracy skills and so minimize the heavy drag that poor literacy and numeracy imposes on educational attainment in the later years of a pupil's career. The Department told us that, with the expansion of pre-school education and the objective of providing a place for every child whose parents want it, the indications are that children are now entering primary school with higher levels of literacy (by 2005, 92 per cent of children were in pre-school education in the year immediately prior to starting primary school). Along with the earlier diagnosis of special educational needs, the Department considers that this will have a positive long term effect. It also told us that a further £10.85 million (increased from £7 million in November 2005) will be invested over the 2006-07 and 2007-08 financial years in a range of measures targeted at young children in disadvantaged areas, to help them get the best start in life and come to school as ready as possible to learn. These include work with parents through the Sure Start programme (a developmental programme for 2 year olds), speech and language therapy and the further expansion of pre-school places integrated into Sure Start settings, to ensure seamless provision for 0-4 year olds in these areas.

4.15 Recently evidence has begun to emerge which suggests that the use of phonics – a method of decoding words by learning the sounds of groups of letters - has produced considerable success in the teaching of literacy. Research findings from Scotland¹¹ have concluded that a programme of

“synthetic phonics” (see Appendix 4) has led to children from lower socio-economic backgrounds performing at the same literacy level as children from advantaged backgrounds and has also led to boys performing better than, or as well as, girls. The Education and Skills Committee¹² recently urged the Department for Education and Skills in Great Britain to commission a large-scale study comparing its National Literacy Strategy with “phonics fast and first” approaches. In Northern Ireland, the Belfast Education and Library Board has been piloting a programme of “linguistic phonics” (Appendix 4) since 2003 in 30 primary and 18 post-primary schools across the city, which is claiming significant results in improving children's reading and writing. The Department told us that, following very positive feedback from participating schools and findings emerging from a formal evaluation, this programme was rolled out to the South Eastern, Western and Southern Boards during the 2005-06 school year. The North Eastern Board is piloting a slightly different phonics programme and is keeping other members of the Literacy Steering Group informed of progress. A feature of both the Early Years Enriched Curriculum and linguistic phonics approach is an identified need for an improved ratio of adults to pupils, in the form of classroom assistants or literacy support assistants/literacy improvement tutors, who would provide additional one-to-one support for pupils.

10 Early cognitive inequality in the 1970 cohort, L Feinstein, *Economica*, 2002.

11 A seven year study of the effects of synthetic phonics teaching on reading and spelling attainment, RS Johnston and JE Watson, *Insight 17*, Scottish Executive Education Department, February 2005.

12 Teaching Children to Read, Education and Skills Committee, HC121, April 2005.

The Department agrees with our recommendation that it should review the overall approach of its improvement programmes and has arrangements underway to conduct a review of the School Improvement Programme

4.16 Disentangling the relative impact of the various influences on literacy and numeracy achievement is a complex task requiring the application of a range of qualitative and quantitative analyses. We acknowledge the Department's view that there is no single solution to improving literacy and numeracy, nor is it likely that any one method or set of changes would lead to a complete elimination of underachievement in both literacy and numeracy. However, the Department needs to ensure that improvement initiatives continue to be underpinned by rigorous research and evaluation methodologies and that it continues to develop appropriate strategies to address areas requiring improvement. We understand that the Department now plans to review its overall approach to literacy and numeracy. We recommend, therefore, that in doing so it takes account of the evidence available from current research into what works to bring about improvement in schools, in order to ensure that the application of available resources meets the relative learning needs of pupils more effectively. In particular, we consider there is a crucial need to increase the momentum of change which will make teaching practices and approaches more responsive to the needs of pupils, and address the long-standing challenges facing schools in terms of literacy and numeracy attainment levels; reducing the disparity between higher and lower achieving pupils; between grammar and secondary school pupils; and ensuring equitable progress for both genders.

Appendices

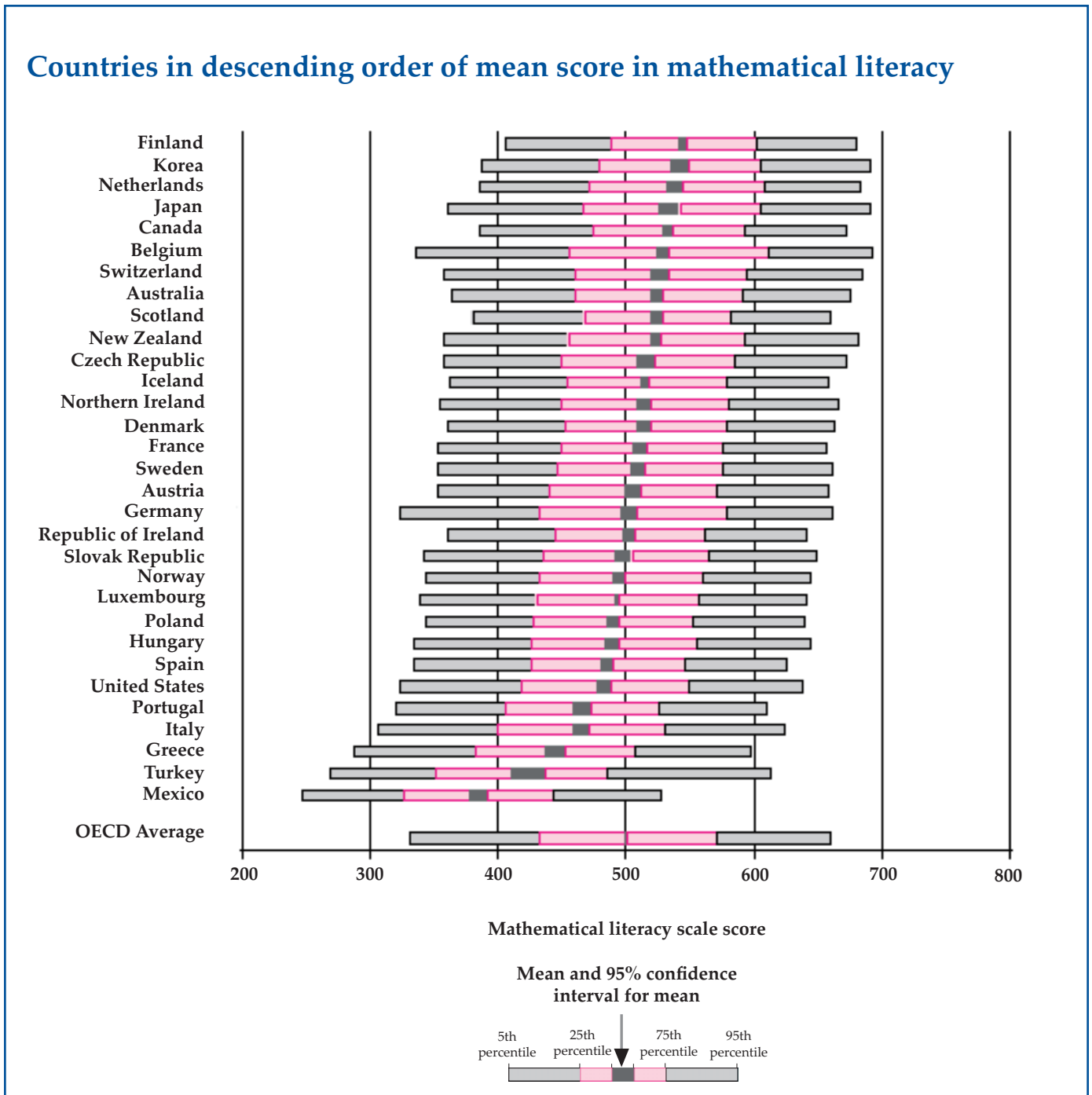
OECD Range and dispersion of scores

The average score is a useful summary measure of student achievement in a country, but it throws no light on the range and distribution of the scores of individual students. The figures overleaf illustrate the distribution of literacy and numeracy skills in each OECD country. The mean scores for each country are at the midpoint of the central band, and the length of the bar shows the range of scores obtained by all but the best 5 per cent and poorest 5 per cent of students - thus it shows the range within which the scores of 90 per cent of students fell.

In numeracy the range of skills was wide in each country and far greater than the differences between countries in their mean scores. The average level of achievement in Northern Ireland was high and the difference in achievement between the most able and least able students was less than the average for the difference observed in most other OECD countries. Scores in Northern Ireland ranged from 354 at the 5th percentile to 666 at the 95th percentile, a 312 scale point difference between the most able and least able students. The countries with the least variation in mathematical literacy scores were Finland and Scotland where 90 per cent of students had scores falling in a range of 274 and 279 points respectively. Students in Belgium, Turkey, Germany and Japan showed the highest degree of variation; in these countries the score point difference between the 5th and 95th percentiles ranged from 329 to 360. There was no clear relationship between average achievement and the degree of dispersion in student scores. Some countries had high average achievement with comparatively homogeneous student scores, most notably Finland, Canada and Scotland. Belgium had a high average achievement but showed greater variation between students than was typical for an OECD country. Turkish students had one of the most wide-ranging scores and relatively low achievement overall (there was a 344 scale point difference between students at the 5th and 95th percentiles, and the mean was 423). However, the level of dispersion found in Turkey was not typical of countries with low average achievement. Mexico, Spain and Portugal all had relatively low levels of mean achievement but a fairly homogeneous distribution of student scores.

As with numeracy, the range of reading skills was wide in each country and far greater than the differences between countries in their mean scores. In Northern Ireland, the average level of achievement was high and there was considerable variation in proficiency between students at the top and bottom ends of the distribution on the reading literacy scale. Scores in Northern Ireland ranged from 348 at the 5th percentile to 667 at the 95th percentile, with a 319 scale point difference between the most able and least able students. The interquartile range in Northern Ireland was 133 scale points. The extent of variation in student scores in Northern Ireland was similar to that in Iceland, France and Australia. In these countries, the range in reading literacy scores of the middle 90 per cent of students was 324 (Iceland) and 321 (France and Australia). The country with the least variation in reading literacy scores was Finland, where 90 per cent of students had scores falling in a range of 266 points. This was closely followed by Korea with 90 per cent of students with scores falling in a range of 267 points. Students in Belgium, Germany, Japan, Greece and New Zealand showed the highest degree of variation; in these countries the score point difference between the 5th and 95th percentiles ranged from 342 to 362.

Distribution of student proficiency on the combined mathematical literacy scale by country

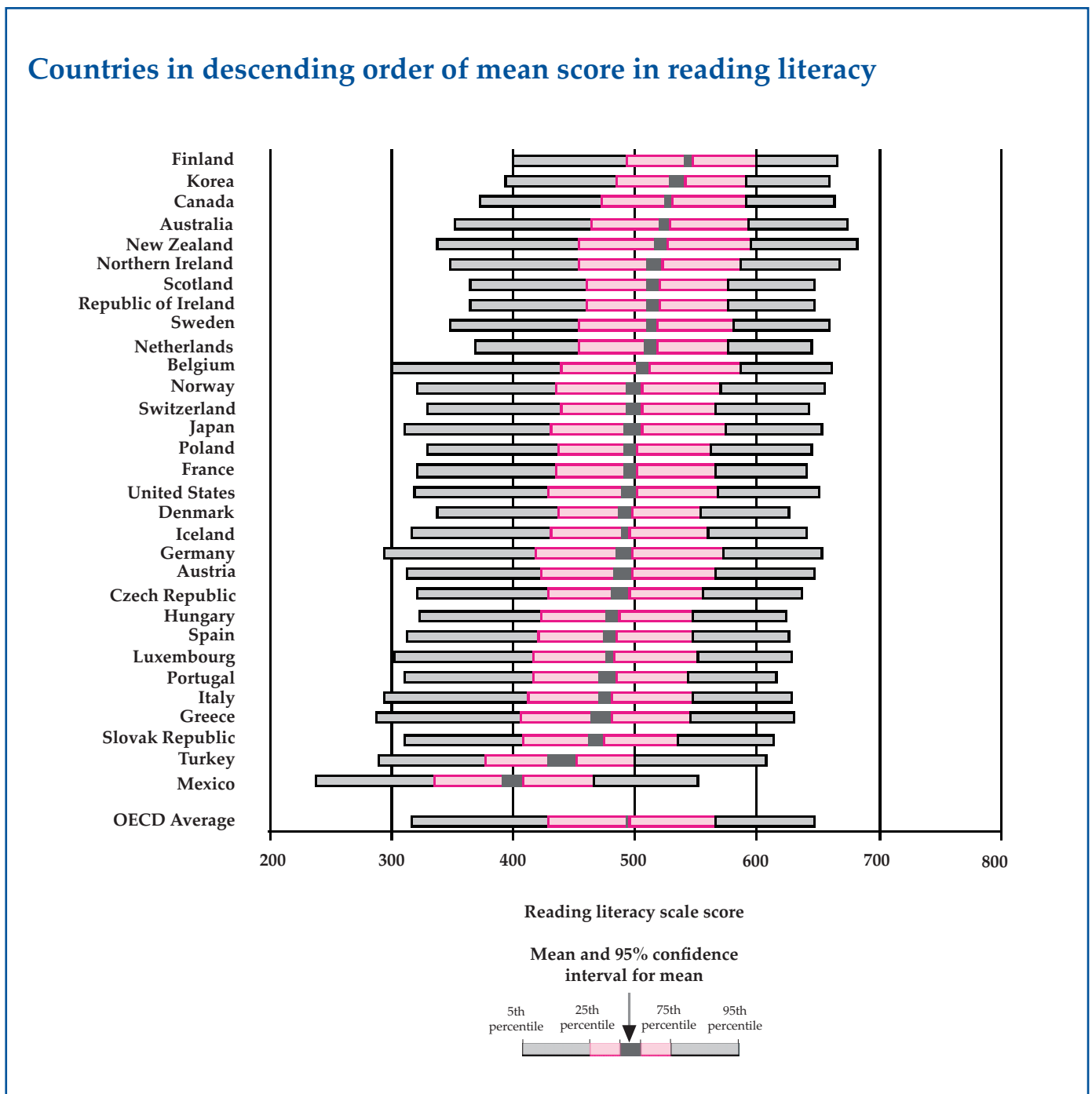


Source: OECD

Appendix 1

(paragraph 1.3)

Distribution of student proficiency in reading literacy by country



Source: OECD

The Reading Recovery Programme

Reading Recovery is designed for pupils perceived to be having difficulties with reading and writing at the end of their first year of primary school, aged around six years. As such it addresses the gap between “normal” classroom teaching and special needs teaching. It aims to improve the pupils’ reading skills and return them to their class of origin within one standard deviation of the class average in reading level. The definition of programme success hinges on the percentage of children successfully discontinued from the programme, and the percentage of children who retain their learning at the class average after the intervention. There are three core components to the programme:

Teacher Training: Reading Recovery teachers require specific training, initially involving fortnightly sessions in a Reading Recovery Centre. After the first year, tutors continue to support the Reading Recovery teachers and provide ongoing professional development twice a term.

Diagnostic Survey: A diagnostic survey is conducted to identify the lowest 20 per cent of achievers.

One-to-One Sessions: This involves the withdrawal of pupils from class for one-to-one support for 30 minutes a day over a period of ten to 20 weeks. The sessions involve reading known stories, reading a story that was read once the previous day, writing a story, working with a cut-up sentence and reading a small new book. The Reading Recovery teacher systematically records what the child is doing, and these observations form the basis for the next lesson.

The Reading Recovery programme has been functioning since 1994, initially as part of the Raising Schools Standards Initiative, and now as part of the current Literacy Strategy.

The Early Years Enriched Curriculum

The Enriched Curriculum was devised jointly by CCEA and the Belfast Education and Library Board to address the perceived problems in the formal traditional curriculum, particularly in disadvantaged areas. The work was influenced by the experiences of principals, teachers and curriculum advisory officers in the Shankill area of Belfast, which showed that the traditional curriculum was not meeting the needs of children and some schools were already exploring alternative approaches.

In the first year, six schools (nine classes) in the Shankill area participated in the Enriched Curriculum and formed the sample for a subsequent evaluation. The initiative was extended in the second year to include six schools (eight classes) from other Education and Library Boards, called the Contrasting Areas. The Contrasting Areas schools were chosen to illustrate the implementation of the curriculum in other Boards and to be representative of the Northern Ireland school population.

The principal aspirations and qualities of the Enriched Curriculum can be summarised as follows:

- removing the early experience of failure and promoting the self-esteem of the child;
- improving oral language skills through such activities as shared reading, circle time and structured play;
- postponing the use of formal reading schemes whilst concentrating on oral language and emergent literacy activities and by activities to enhance phonological awareness and to lay the basis for phonic skills;
- postponing formal recorded arithmetic whilst laying the foundations for a strong sense of number through sorting, matching, counting and other basic activities;
- promoting good motor development through appropriate indoor and outdoor activities;
- encouraging creativity through activities such as role-play, art and music-making; and
- encouraging children to take responsibility for their own learning.

Evidence from a three-year study conducted by researchers at Queen's University, Belfast and Stranmillis University (footnote 8) revealed that:

- within four years, the reading levels of pupils were not significantly different from those that would have been achieved under the previous more formal curriculum;
- on other measures such as oral language skills, narrative and expressive writing and vocabulary, pupils appeared to be performing better than comparable control groups; and
- at this stage, and in the absence of evidence of the long term impact on pupil outcomes, no detrimental effects or reading scores emerged, and other positive learning outcomes were achieved.

One particular recommendation of the evaluation concerned the need to provide classroom assistants to support teachers in delivering the new curriculum, a recommendation with considerable financial implications.

Phonics approaches for the teaching of reading

There are two major approaches to teaching children the alphabetic principle: analytic/linguistic and synthetic phonics. While these two types can be distinguished, there is a continuum from the analytic/linguistic to the synthetic.

Analytic/Linguistic

This approach has formed part of the early years reading programme in Scotland for many years. It teaches children whole words and then breaks them down into the letter sounds, concentrating at first on the initial letters of words. Children are given books and are expected to use the pictures and context of the stories to predict what the words mean. The theory is that by learning the words with which they are presented, they will be able to work out how to say new words by building on previous experience.

Synthetic

The synthetic phonics method teaches children the 44 letter sounds in the English language and then merges them together to make words. This is a three-stage system. First, children are taught the sound, for example, “b”; then words which use the sound, “big” and “bin”. Finally they are shown pictures to learn the meaning of the word. This method means they can look at any word and work out how it is said because they know the sounds which make it up.

A study carried out in schools in mostly disadvantaged areas in Clackmannanshire, Scotland, looked at the progress children had made on a synthetic phonics programme from Primary 1 through to the end of Primary 7. This found that gains made in word reading in Primary 1 had increased 6 fold by the end of Primary 7, going from 7 months to 3 years 6 months ahead of chronological age. The gain in spelling was 4.5 fold, going from 7 months to 1 year 9 months ahead of chronological age. Although reading comprehension scores were tending to diminish over time, at the end of the study they were still significantly above chronological age and were good, given the children’s somewhat below average levels of vocabulary knowledge. The sample of children studied showed a skew towards coming from less advantaged socio-economic backgrounds, so the gains in literacy skills over what would be expected for chronological age are particularly noteworthy. It was also shown that at the end of Primary 2, children from disadvantaged homes performed as well as those from better-off homes if taught by the synthetic phonics programme, whereas with analytic phonics teaching, they did significantly less well. Furthermore, although children from disadvantaged backgrounds usually have poorer literacy skills from the start of schooling, the children from less-well-off homes in this study were only starting to fall significantly behind at the end of Primary 7, and then were still performing at or above chronological age on word reading, spelling and reading comprehension.

It can be concluded that the synthetic phonics programme led to children from lower socio-economic backgrounds performing at the same level as children from advantaged backgrounds for most of their time in primary school. It also led to boys performing better than or as well as girls.

NIAO Reports 2005-06

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