

NATIONAL NUMERACY PROJECT

TECHNICAL REPORT 1998

**Mary Minnis
Rachel Felgate
Ian Schagen**

nfer

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INVESTOR IN PEOPLE

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Contents

Acknowledgements

Introduction

- Guide to Terms used in the Report 2
- Outline of Table Contents 3

Summary of Findings – Cohorts 1, 2 and 3 6

Section 1 – Multilevel Analysis of Results and Background Data 9

- Cohort 1 11
- Cohort 2 34
- Cohort 3 55

Section 2 -Full Data Sets 73

- Cohort 1 75
 - Year 3 Project Report 1 76
 - Year 3 Project Report 2 78
 - Year 3 Project Report 3 79
 - Year 3 Project Report 4 80
 - Year 3 Item Facilities Report 81
 - Year 3 Charts 1 – 8 84
 - Year 4 Project Report 1 89
 - Year 4 Project Report 2 91
 - Year 4 Project Report 3 92
 - Year 4 Project Report 4 93
 - Year 4 Item Facilities Report 94
 - Year 4 Charts 1 – 8 97

Year 6	Project Report 1	102
Year 6	Project Report 2	104
Year 6	Project Report 3	105
Year 6	Project Report 4	106
Year 6	Item Facilities Report	107
Year 6	Charts 1 – 8	110
• Cohort 2		114
Year 2	Project Report 1	115
Year 2	Project Report 2	117
Year 2	Project Report 3	118
Year 2	Item Facilities Report	119
Year 2	Charts 1 – 8	122
Year 3	Project Report 1	127
Year 3	Project Report 2	129
Year 3	Project Report 3	130
Year 3	Item Facilities Report	131
Year 3	Charts 1 – 8	134
Year 5	Project Report 1	139
Year 5	Project Report 2	141
Year 5	Project Report 3	142
Year 5	Item Facilities Report	143
Year 5	Charts 1 – 8	146

• Cohort 3		150
Year 1	Project Report 1	151
Year 1	Project Report 2	152
Year 1	Item Facilities Report	153
Year 1	Charts 1 – 7	155
Year 2	Project Report 1	159
Year 2	Project Report 2	160
Year 2	Item Facilities Report	161
Year 2	Charts 1 – 7	164
Year 4	Project Report 1	168
Year 4	Project Report 2	169
Year 4	Item Facilities Report	170
Year 4	Charts 1 – 7	173

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Introduction

This report summarises at Project level the results of testing carried out during the Summer term 1998 in 3 cohorts of schools participating in the Project.

Schools in Cohort 1 were taking part in their third and final round of testing (Exit, Round 3) having taken Entry tests in January 1997 and Progress tests in May 1997. The year groups involved in these schools were Years 3, 4 and 6.

Schools in Cohort 2 were taking part in their second round of testing within the Project (Progress, Round 2) having taken Entry tests in May 1997. The year groups involved in these schools were Years 2, 3 and 5.

Schools in Cohort 3 were taking part in the first round of testing (Entry, Round 1). The year groups involved in these schools were Years 1, 2 and 4.

The tests used were designed for the Numeracy Project. Each year group has its own written and mental test. Written and mental scores were analysed separately and also combined to give an overall score.

The results of the tests have been analysed at each level i.e. pupil level, school level, LEA level and Project level and reported appropriately, e.g. individual pupils' performance has been reported only to their own school, individual school results have been reported to each school and also to their own LEA. This report contains analyses at Project level and summarises results from individual LEAs.

The data from the tests has been collated into tables and charts and has also been analysed using multilevel modelling techniques which allow background data at pupil and school level to be taken into account when comparing the results of one school with another or one LEA with another.

It is recognised that this report refers only to those schools in each LEA taking part in the Project and that this group of schools may not be representative of the LEA. However, for reporting purposes, the schools data have been grouped by LEA and will be referred to as LEA data.

Guide to Terms

Terms which are referred to throughout the Multilevel Analysis in Section 1 and in tables and charts in Section 2 are defined here.

Raw score - This is the number of questions in the test that the pupil answered correctly, which ranges from 0 up to the maximum number of questions. One feature of a raw score is that it does not include any allowance for the pupil's age. The maximum number of marks for both the written and mental tests are given below.

	Written test	Mental test	Overall
Year 1	33	18	51
Year 2	38	19	57
Year 3	45	24	69
Year 4	49	24	73
Year 5	50	30	80
Year 6	50	30	80

Standardised score - This is the pupil's score put onto a different scale. There are two reasons why the standardised score scales are used:

- (i) so that scores are on a scale that is readily recognisable, user-friendly, and common to all educational tests;
- (ii) so that an age-allowance can be included, which means that pupils can be compared with other pupils of a different age. The standardised scores of the nationally representative sample are set to an average of 100 and to a standard deviation of 15 (see below).

Mean score - This is another term for the average score, i.e. the average score of all the pupils in the particular category.

Standard deviation - A measure of the spread of scores within a group of individuals. Normally we would expect about 95% of the individuals to be within 2 standard deviations either side of the mean: that is, with standardised scores lying between 70 and 130.

Facility Value - The facility value of each item (question) in a test is the overall percentage of pupils tested who give the correct answer.

Outline of Table Contents

The same tables and charts are provided for each participating year group. Some tables and charts are common to all three cohorts but Cohorts 2 and 3 have additional charts and tables to illustrate progress made over time.

Pupils who were absent for the tests have not been included in calculation of the mean; pupils who were not tested for any other reason have been included in the mean with a standardised score of 69.

Project Report 1

This report shows the mean standardised score for the written test, mental test and overall for this round of testing. In addition the report for Cohort 1 shows measures of progress between Round 1 and Round 3 (Entry to Exit) and for Cohort 2 shows measures of progress between Round 1 and Round 2 (Entry to Progress). The results are grouped according to various individual pupil level background factors such as gender, ethnicity etc.

Project Report 2

This report shows the mean standardised score for the written test, mental test and overall for each LEA.

Project Report 3

This report is provided for Cohorts 1 and 2 only. It shows the progress measures for the written and mental tests and overall for each LEA within the Project from Round 1 to Round 2 (Entry to Progress) for Cohort 2 and from Round 1 to Round 3 (Entry to Exit) for Cohort 1.

Project Report 4

This report is provided for Cohort 1 only. It compares the progress measures for each LEA from Round 2 to Round 3 and Round 1 to Round 3.

Item Facilities

This table lists the test questions (items) sorted according to the difference between facility values for the pupils in the Project and facility values for the National Standardisation sample. A positive percentage difference for a particular item indicates that the performance of Project pupils was better than that of pupils in the National Standardisation sample. Each item has been classified according to the type of question, and context where appropriate, in order to help identify patterns of performance. The codes used are given below together with the section of the Framework which addresses the appropriate topic.

Question type	Refer to these sections of the Framework
A Addition	Understanding addition Mental calculations (+ -) Written calculations (+ -) from Yr.3 onwards
S Subtraction	Understanding subtraction Mental calculations (+ -) Written calculations (+ -) from Yr.3 onwards
M Multiplication	Understanding multiplication Mental calculations (x ÷) Written calculations (x ÷) from Yr.4 onwards
D Division	Understanding division Mental calculations (x ÷) Written calculations from Yr.4 onwards
N Number properties	Properties of numbers
P Place value	Place value
G Rounding, approximating	Ordering Estimating Rounding
R Reading scales	Problems involving length, mass, capacity (reading from scales)
F Fractions, decimals	Fractions and decimals
% Percentages	Percentages

Context for calculations

£ Money	Problems involving money
C Capacity	Problems involving length, mass or capacity
E Everyday life	Problems involving 'real life'
H Handling data	Handling data
I Area and perimeter	Area and perimeter
K Mass or weight	Problems involving length, mass or capacity
L Length	Problems involving length, mass or capacity
T Time and speed	Time
V Volume	Volume

Type of calculation

X Calculation only, no context	see Mental calculations - using knowledge of number system and place value
B Box arithmetic, answer given with unknown number to find	see Mental calculations - using knowledge of number system and place value
O Open ended, more than one answer is possible	see Mental calculations - using knowledge of number system and place value

Summary of Findings

Cohort 1

These pupils have been part of the Numeracy Project for two years and have been tested on three occasions, in January 1997, June 1997 and June 1998.

For all three year groups there has been a significant rise in their average age-standardised score between Entry and Exit testing.

Year Group in 1998	Average standardised score on Entry	Average standardised score on Exit	Increase in standardised score
Year 3	96.5	102.1	6.6
Year 4	95.8	103.0	7.6
Year 6	95.9	99.9	5.1

For this cohort in Years 3 and 6 it appears that greater progress was made between Round 1 and Round 2 testing than between Round 2 and Round 3, despite the fact that the testing periods for Round 1 and Round 2 were relatively close together. Year 4 made slightly more progress between Round 2 and 3. Not every pupil for whom a progress score was calculated at the end of Round 2 went on to be tested at the end of Round 3. The increase in score for Round 1-3 therefore, is not necessarily equal to the sum of the increase for Round 1-2 and Round 2-3.

Pupils in Year 4 and Year 6 had very similar levels of achievement on entry to the Project with both groups of pupils having generally below average standardised scores. These pupils were tested using the 'Year 4' test at two different time points (the Year 4 pupils on Exit and the Year 6 pupils on Entry). Comparison of average scores obtained from this test at the different points in time shows that the average achieved score in Cohort 1 schools improved by 7.1 standardised score points in just over one year.

Year Group in 1998	Increase in standardised score Round 1-2	Increase in standardised score Round 2-3
Year 3	5.2	1.6
Year 4	3.3	4.3
Year 6	3.7	1.6

Cohort 2

These pupils have been part of the Numeracy Project for one year and have been tested on two occasions, in June 1997 and June 1998. For all three year groups there has been a significant rise in their average age-standardised score between Entry and Progress testing.

Year Group in 1998	Average standardised score on Entry	Average standardised score at Progress	Increase in standardised scores
Year 2	97.1	104.1	7.8
Year 3	98.3	102.4	4.2
Year 5	98.4	101.3	3.4

It can be seen from the results above that the characteristics of the year groups within each cohort vary. Pupils in Cohort 1 generally had lower average standardised scores on entry to the Project than pupils in Cohort 2.

Cohort 3

For Cohort 3 pupils who will become part of the Numeracy Project in Autumn 1998 the average scores on entry are shown below:

Year Group in 1998	Average standardised score on Entry
Year 1	98.4
Year 2	100.6
Year 4	100.4

Pupil and School Factors

The progress scores for Cohorts 1 and 2 varied significantly according to a number of pupil and school factors. Full details of these variations are given in the multilevel analysis for each Cohort. The multilevel analysis also incorporates responses given by headteachers to a questionnaire about various aspects of the work of the Project which was completed by schools in Cohorts 1 and 2.

Control group test results

A sample of schools were invited to act as a 'control' group to enable the progress measured in National Numeracy Project schools to be compared to progress made in numeracy in schools generally. These schools came from LEAs not involved in either the National Numeracy Project or the National Literacy Project and were selected so that as far as possible they would be similar to schools in Cohort 2 of the National Numeracy Project. The control schools were asked to administer the tests used in the Project to pupils in the appropriate year group – at the same time and under the same conditions as for Project. The progress scores for this group of schools are illustrated below, together with the progress scores for Cohort 2 schools

Year group in 1998	Control Group			Numeracy Project		
	Written	Mental	Overall	Written	Mental	Overall
Year 2	1.41	2.56	1.99	6.7	9.0	7.8
Year 3	2.89	2.50	2.48	4.3	4.6	4.2
Year 5	0.81	2.08	1.38	2.8	4.0	3.4

The results indicate that although progress in numeracy is evident in both the control group and the National Numeracy Project schools, considerably more progress has been made in the Project schools.

Section 1

Multilevel Analysis

Introduction to Multilevel modelling

Multilevel modelling is a development of a common statistical technique known as 'regression analysis'. This is a technique for finding a straight-line relationship which allows us to predict the values of some measure of interest ('dependent variable') given the values of one or more related measures. For example, we may wish to predict schools' average test performance given some background factors, such as free school meals and school size (these are sometimes called 'independent variables').

Multilevel modelling is a recent development of regression analysis which takes account of data which is grouped into similar clusters at different levels. For example, individual pupils are grouped into year groups or cohorts, and those cohorts are grouped within schools, which may themselves be grouped within LEAs. There may be more in common between pupils within the same cohort than with other cohorts, and there may be elements of similarity between different cohorts in the same school, or different schools in the same LEA. Multilevel modelling allows us to take account of this hierarchical structure of the data and produce more accurate predictions, as well as estimates of the differences between pupils, between cohorts, between schools, and between LEAs.

Details of the way in which multilevel models were set up for each of the Cohorts in the National Numeracy Project in 1998 are given below together with the full results of each analysis. For each Cohort the findings are summarised briefly first.

Cohort 1 (Entry, Progress and Exit)

Summary

- There were statistically significant increases in age-standardised test scores between Round 1 (entry) and Round 2 (progress) and Round 3 (exit) testing. This applies to all three test scores and all year groups.
- The variables with apparently positive relationships with test score are stage of English fluency, some ethnic groups relative to the white population (Indian and Chinese), being a voluntary aided or controlled school, and KS2 teaching time. Background variables with

apparently negative relationships with test scores include sex (girls having lower scores than boys, on average), SEN level, eligibility for free school meals, percentage of SEN pupils and percentage eligible for free school meals, and pupil/teacher ratio.

- The class size variable was positively related to overall performance, and in some cases there was a significant relationship with the squared class size. The latter effect implies that the relationship with class size is greater with larger classes. It is important, however, not to interpret such a finding in a causal fashion – it is a common finding, and is probably more to do with the general tendency to put higher performers in larger classes and lower performers in smaller ones.
- Looking at interaction terms, it seems that progress from Round 1 to Round 3 is positively related to voluntary schools, and negatively to sex (girls make on average less progress than boys) and original score. In Years 4 and 6, class size was positively related to progress.
- The factors from the headteacher questionnaire were overall positively related to progress in written and overall scores, although different ones appeared most significant relative to different outcome scores. Factor 3 (framework and initial audit) was significantly related to progress for both written and overall scores.
- Considering year groups separately, in general the same relationships as above were found, with some minor variations.
- There was much more variation between pupils than between year groups, schools or LEAs. About 5% of the variation between pupils could be explained by pupil background variables, and about half of the variation between schools could be explained by a combination of pupil and school variables.

The Model for Cohort 1

The third round of data collection for Cohort 1 of the National Numeracy Project included background data, and baseline and progress scores for pupils in Years 3, 4 and 6. The following types of data were collected:

- Raw and standardised scores on mathematics tests at entry and at the end of both academic years (different tests for each Year);
- Pupil background data;
- School background data;
- School-level data on factors such as time devoted to mathematics etc.

Table 1 contains details of all the variables derived from the data collection exercise which were used in this phase of multilevel analysis. The aim of the analysis was to investigate factors at the school and pupil levels which might be associated with mathematics scores, and to see which were apparently statistically significant. It was also possible to carry out an analysis of progress, making use of the fact that standardised scores were available at three different time-points for most pupils. This analysis depends critically, of course, on the assumption that the standardisations were carried out in a comparable fashion at all time-points.

In addition to the normal school and pupil background data, results from questionnaires to headteachers were available, in the form of factor scores representing the perceived usefulness of various aspect of the Project. These were included to investigate any apparent relationships with progress.

Results of Multilevel Analysis

Tables 3 to 8 show some of the detailed results of the multilevel model fitting to various datasets: all years combined for each of three outcomes, and Years 3, 4 and 6 for overall score only. In technical language, these tables show the random variances at each level at each stage of model fitting, plus the coefficients of the background variables in the 'full model'. They also show whether or not variances or coefficients are statistically significant at the 5% level, as well as 95% confidence intervals for each parameter.

These tables, although they show the full results of all the modelling carried out at this stage, may not be easy to interpret for all readers. To help with this, therefore, the coefficients which express the estimated relationships between test scores and each of the background variables have been converted into 'effect sizes' which represent the 'strength' of each relationship as a percentage, and which allow the different variables to be compared in terms of their apparent influence on the test outcome, when all other variables are simultaneously taken into account.

Effect sizes are plotted in Figures 1 to 6, for the six different models described in Tables 3 to 8. For each variable, the estimated effect size is plotted as a diamond, with a vertical line indicating the 95% confidence interval for the estimate. Any variable whose line intersects the horizontal zero axis can be regarded as not statistically significant (at the 5% level). Positive values imply a positive relationship with the test score outcome; negative values imply that test score tend to decrease with higher values of the given background variable.

The way in which these models have been set up means that most of the effects relate to overall performance in various aspects of mathematics, over both testing periods. Thus the strong positive relationship with stage of English fluency implies that mathematics scores as a whole are related to this factor, but does not tell us anything about progress from one time point to another. To measure the latter, we need to include 'interaction terms' in the model, which relate background factors to changes over time in scores.

Nine such 'interaction terms' were included in the model, to look at the relationships between background variables (including headteacher questionnaire factors) and progress:

- **SEXINT:** Relationship between females and progress;
- **OSCORINT:** Relationship between overall score on entry and progress;
- **MAT1INT:** Relationship between time dedicated to mathematics at KS1 and progress;
- **MAT2INT:** Relationship between time dedicated to mathematics at KS1 and progress;
- **VOLINT:** Relationship between voluntary sector schools and progress;
- **HTINT1:** Relationship between usefulness of the 5-day course and progress;

- **HTINT2:** Relationship between usefulness of the training and consultancy and progress;
- **HTINT3:** Relationship between usefulness of the framework and internal audit and progress;
- **HTINT4:** Relationship between usefulness of the project materials and progress.

The interpretation of the model results for these variables is straightforward. If, for example, the coefficient of SEXINT is negative, this implies that girls are making less progress than boys on average. A positive coefficient for VOLINT would imply that pupils in voluntary schools are making more progress than others, and so forth. Note that we would expect a negative coefficient for OSCORINT, as this implies that those starting from a higher score are likely to make less progress on average.

Figure 1: Effect Sizes from Multilevel Model fitted to Written Test Scores for All Year Groups

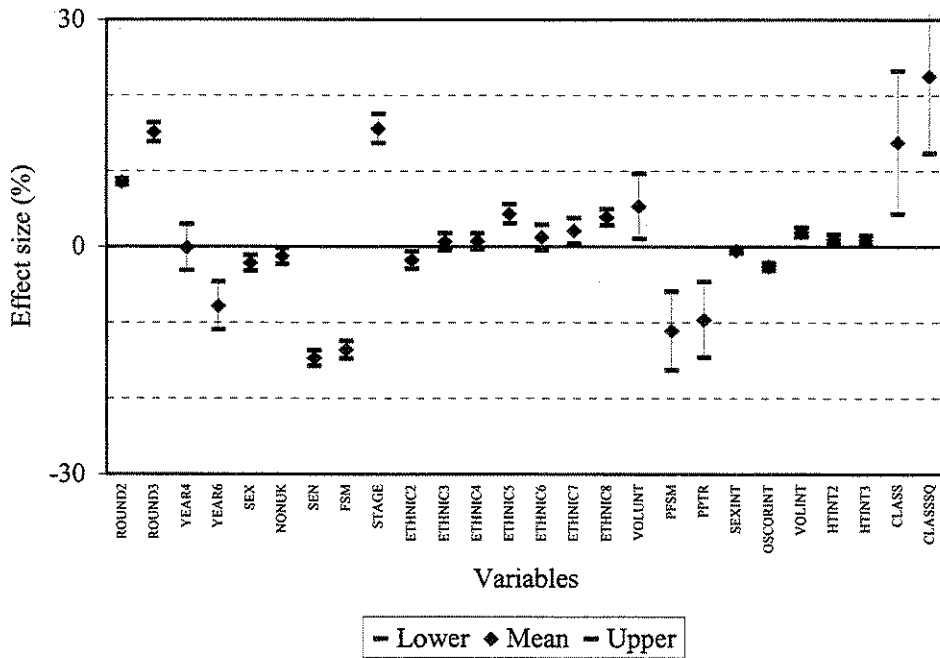


Figure 2: Effect Sizes from Multilevel Model fitted to Mental Test Scores for All Year Groups

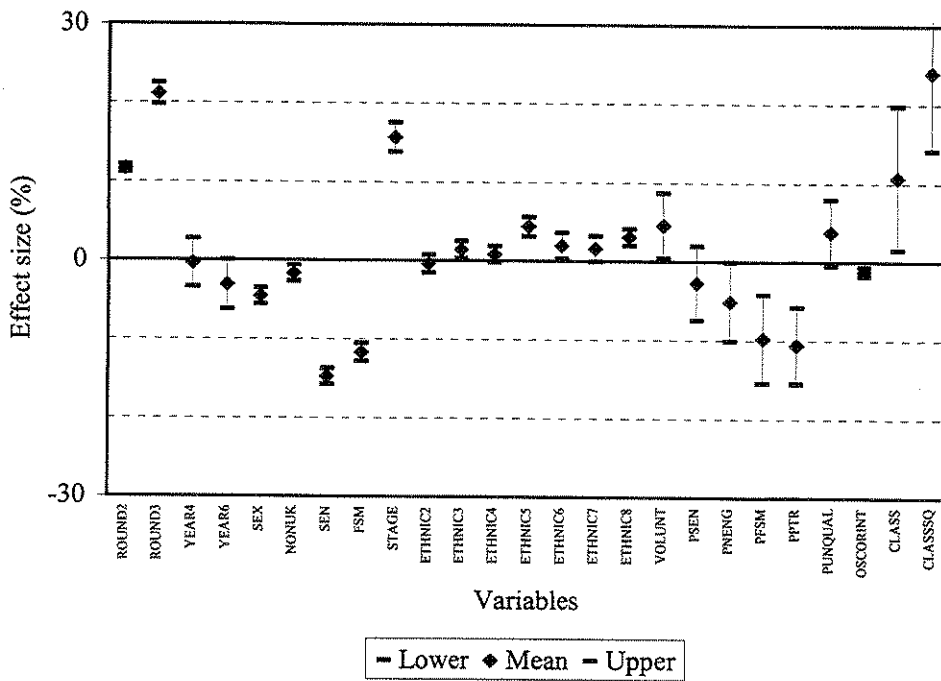
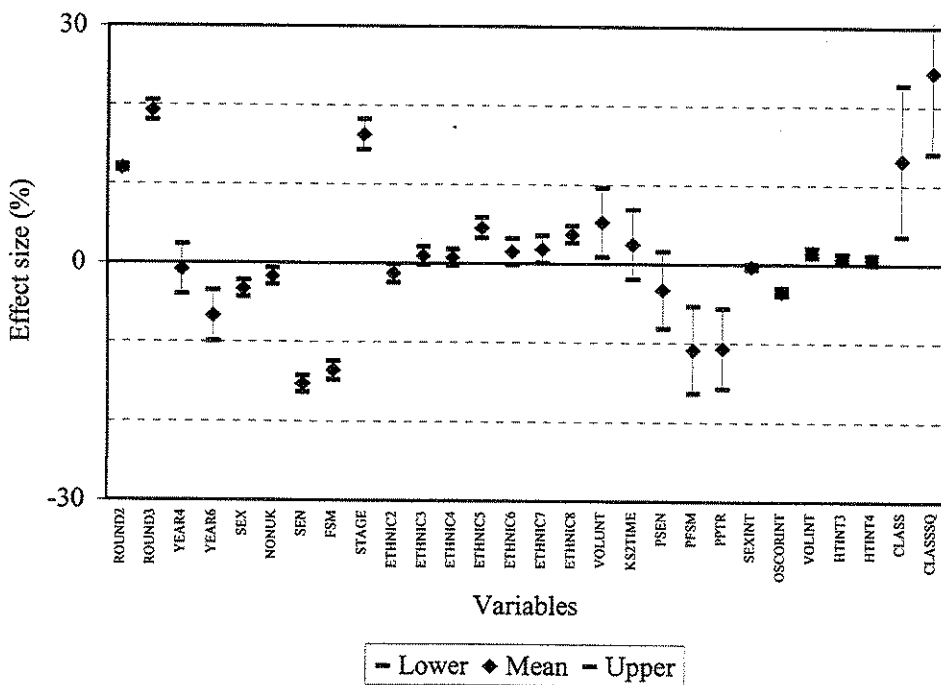


Figure 3: Effect Sizes from Multilevel Model fitted to Overall Test Scores for All Year Groups



In Figure 1 to 3, above, it is clear that the variables with apparently positive relationships with test score are round of testing (with significantly higher age-standardised scores in Rounds 3 and 2 compared with Round 1), stage of English fluency, some ethnic groups relative to the white population (i.e. Indian and Chinese), being a voluntary aided or controlled school, and KS2 teaching time. Background variables with apparently negative relationships with test scores include sex (girls having lower scores than boys, on average), SEN level, eligibility for free school meals, percentage of SEN pupils and percentage eligible for free school meals, and pupil/teacher ratio.

The class size variable was positively related to overall performance, and in some cases there was a significant relationship with the squared class size. The latter effect implies that the relationship with class size is greater with larger classes. It is important, however, not to interpret such a finding in a causal fashion – it is a common finding, and is probably more to do with the general tendency to put higher performers in larger classes and lower performers in smaller ones.

Looking at interaction terms, it seems that progress from Round 1 to Round 2 is positively related to voluntary schools, and negatively to sex (girls make on average less progress than boys) and original score. The factors from the headteacher questionnaire were overall positively related to progress in written and overall scores, although different ones appeared most significant relative to different outcome scores. Factor 3 (framework and initial audit) was significantly related to progress in both cases.

Some of the relationships displayed here will be intuitively reasonable, and others may be less so. Some may be artefacts, or produced through a relationship with a third factor not included in the model. The other three figures, for Years 3 to 6, will show some of the same patterns and some which are different. For example, in Years 4 and 6, class size was positively related to progress.

Figure 4: Effect Sizes from Multilevel Model fitted to Overall Test Scores for Year 3

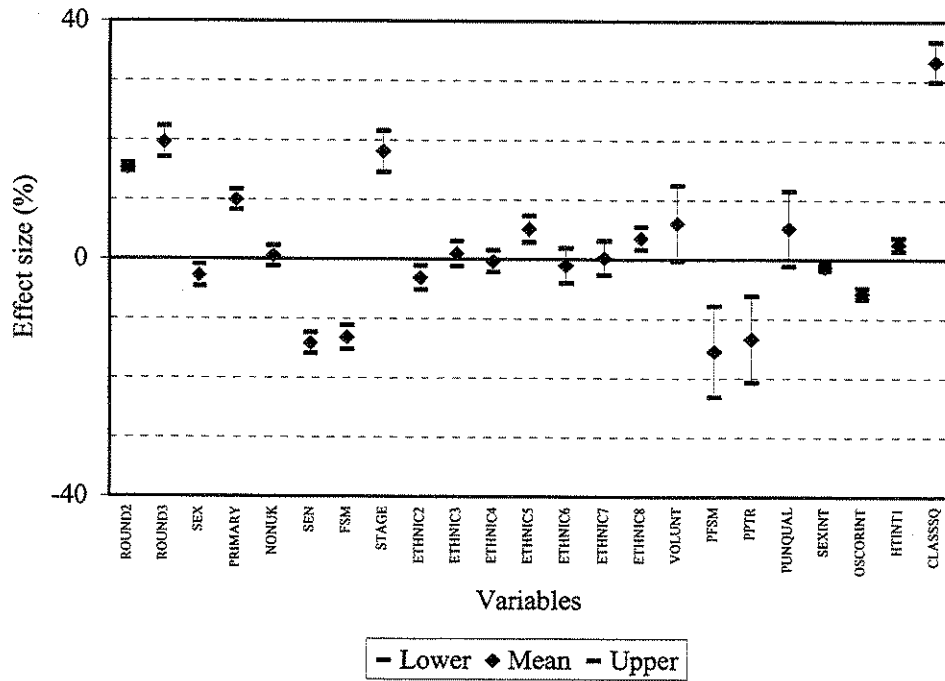


Figure 5: Effect Sizes from Multilevel Model fitted to Overall Test Scores for Year 4

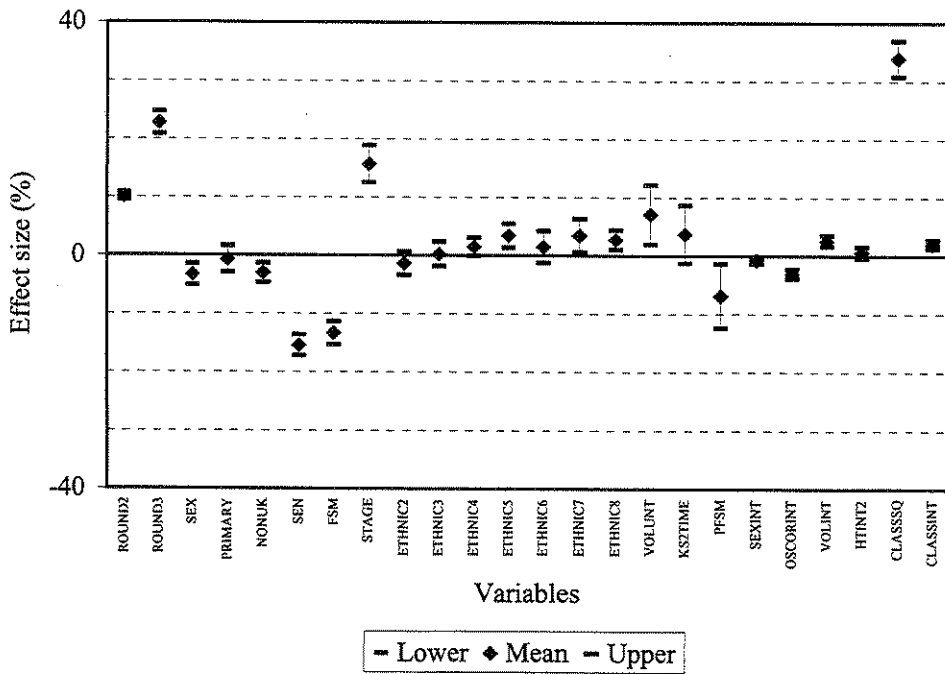
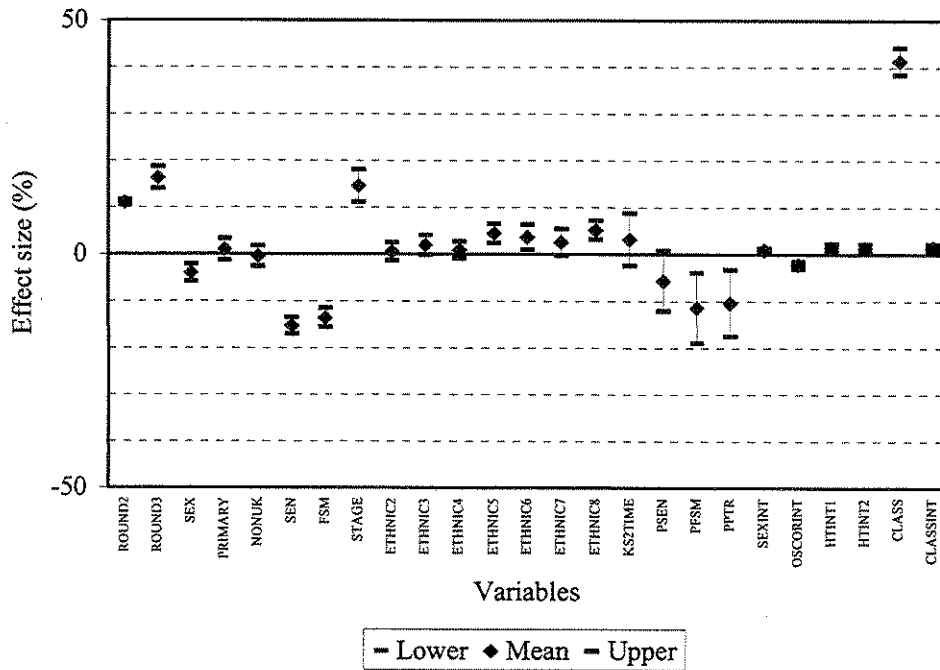


Figure 6: Effect Sizes from Multilevel Model fitted to Overall Test Scores for Year 6



In addition to the relationships between test scores and a host of background variables described above, the multilevel model provides other information. In particular, it estimates the amount of variation in test scores which can be attributed to different levels in the model. The unified model had five levels: LEA, school, cohort and pupil, and there will in general be measurable differences in average test scores between units at each level. The amount of variation at each level is measured by the 'variance' (basically the square of the standard deviation) at that level, and may change as extra background variables are fitted to the model. For example, some of the differences between schools in average test scores may be eliminated when we take into account school-level variables such as percentage eligible for free school meals.

Figure 7: Random Variances in Overall Test Score at Different Levels for All Year Groups

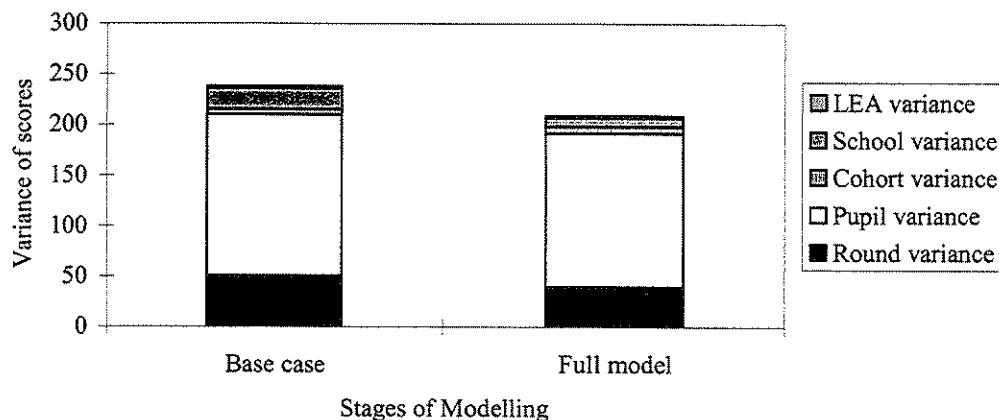


Figure 7 illustrates this effect, using the unified model fitted to all year groups. At each of the stages of modelling, the total variance is divided between the five levels in the model. For the base case, the total variance is close to the theoretical value of 225 for an age-standardised score with standard deviation 15.

It is clear from the above figure that in general the variance increases at lower levels: the greatest degree of variation is between pupils, and then between year groups, and then between schools, and lastly between LEA groups of schools. The bottom level, the 'round variance' is a measure of the amount of 'noise' or measurement error between different assessments of the same pupils. The introduction of pupil-level background variables reduces the pupil variance by about 5%, and pupil and school information together reduce school-level variance by over a half.

The model allows us to estimate for each school or LEA a 'residual', which is the amount by which its results (aggregated over all three rounds of testing) differ from what might have been expected, given all the pupil and school background data. Figures 8 to 11 show the residuals for all the LEAs with schools in the project for overall test score, for all year groups combined and for Years 3, 4 and 6 separately. The plots indicate by a vertical line the 95% confidence interval for each LEA's residual value. Only those LEAs whose lines do not intersect the horizontal zero axis might be regarded as having results significantly different from expected.

Figure 8: Adjusted LEA Residuals (Overall Score) for Cohort 1, All Year Groups, showing 95% confidence intervals

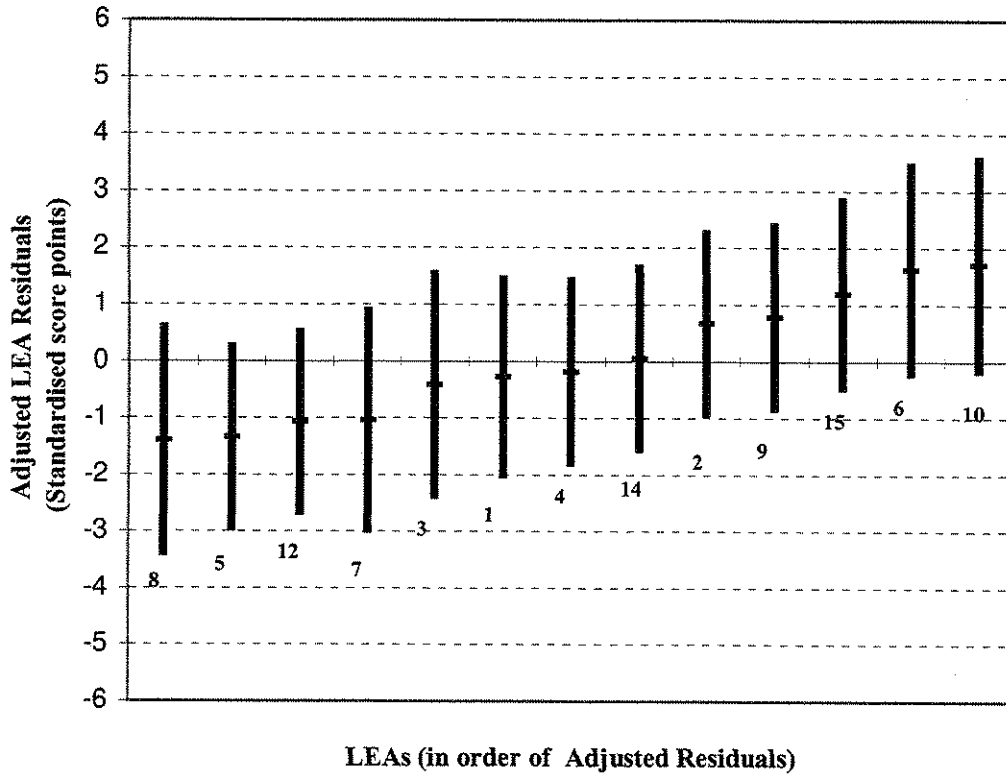


Figure 9: Adjusted LEA Residuals (Overall Score) for Cohort 1 Year 3, showing 95% confidence intervals

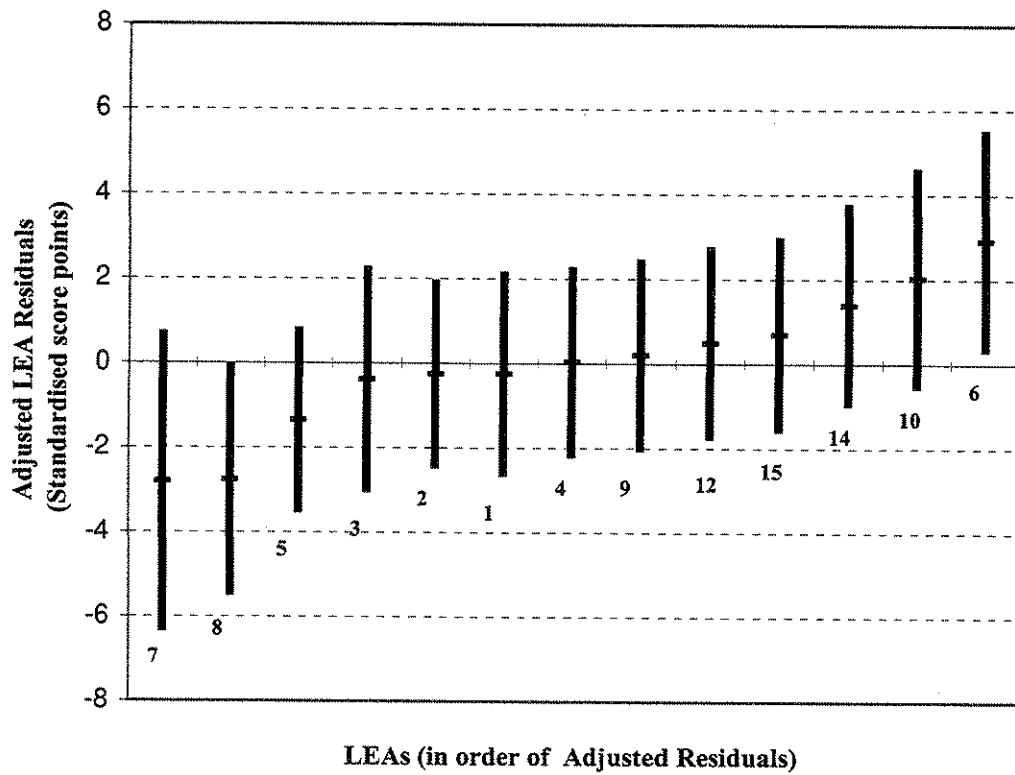


Figure 10: Adjusted LEA Residuals (Overall Score) for Cohort 1 Year 4, showing 95% confidence intervals

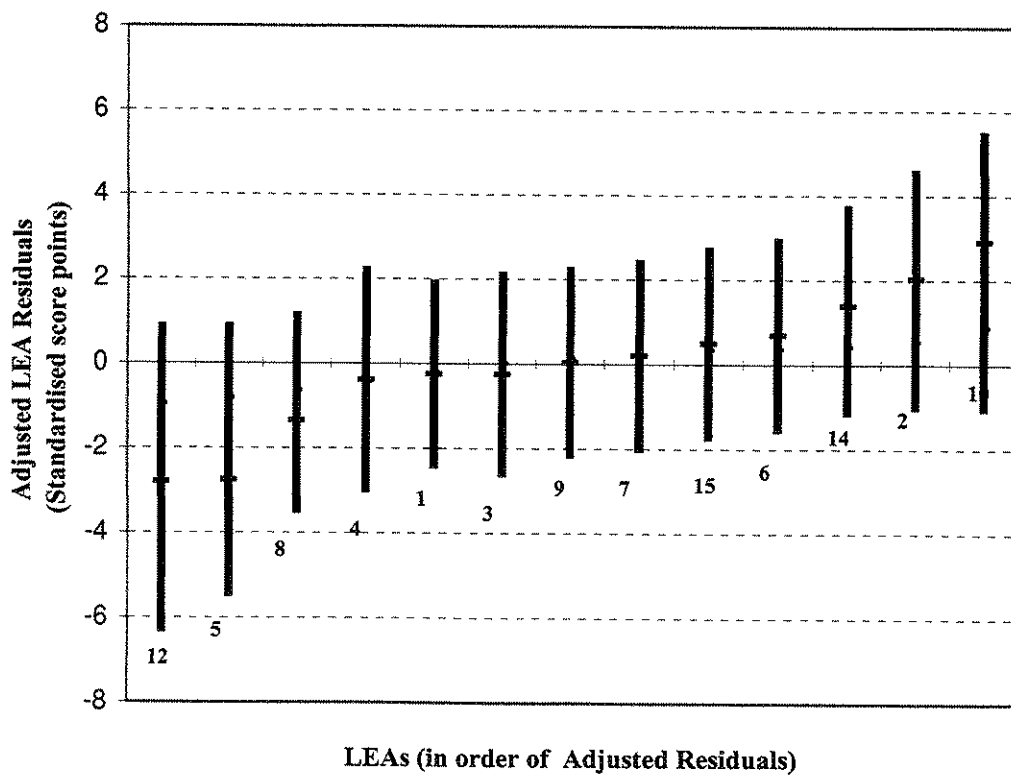
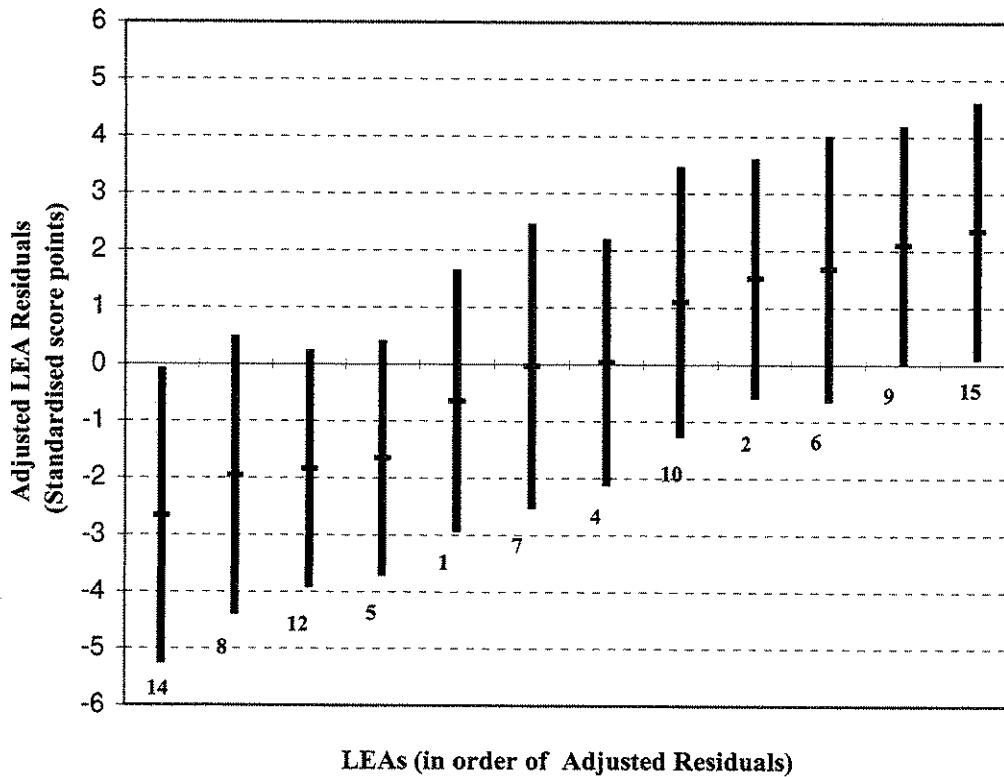


Figure 11: Adjusted LEA Residuals (Overall Score) for Cohort 1 Year 6, showing 95% confidence intervals



The above plots indicate how LEA results relate to the overall project, **in terms of overall performance averaged over all rounds of testing**, and controlling for a range of background factors. What is also of interest is the amount of progress made between rounds 1 and 3. This can be assessed for each LEA by means of a 'random slopes' multilevel model, in which it is assumed that the amount of progress between rounds of testing varies from school to school and from LEA to LEA. The estimated progress measures for the LEAs and their standard errors can be estimated, **in terms of the average change in standardised score from Round 1 to Round 3**, controlling for other factors. These progress measures are plotted in Figures 12 to 15, for all year groups combined and separately for Years 2, 3 and 5.

Figure 12: Adjusted LEA Progress Measures (Overall Score) for Cohort 1, All Year Groups, showing 95% confidence intervals

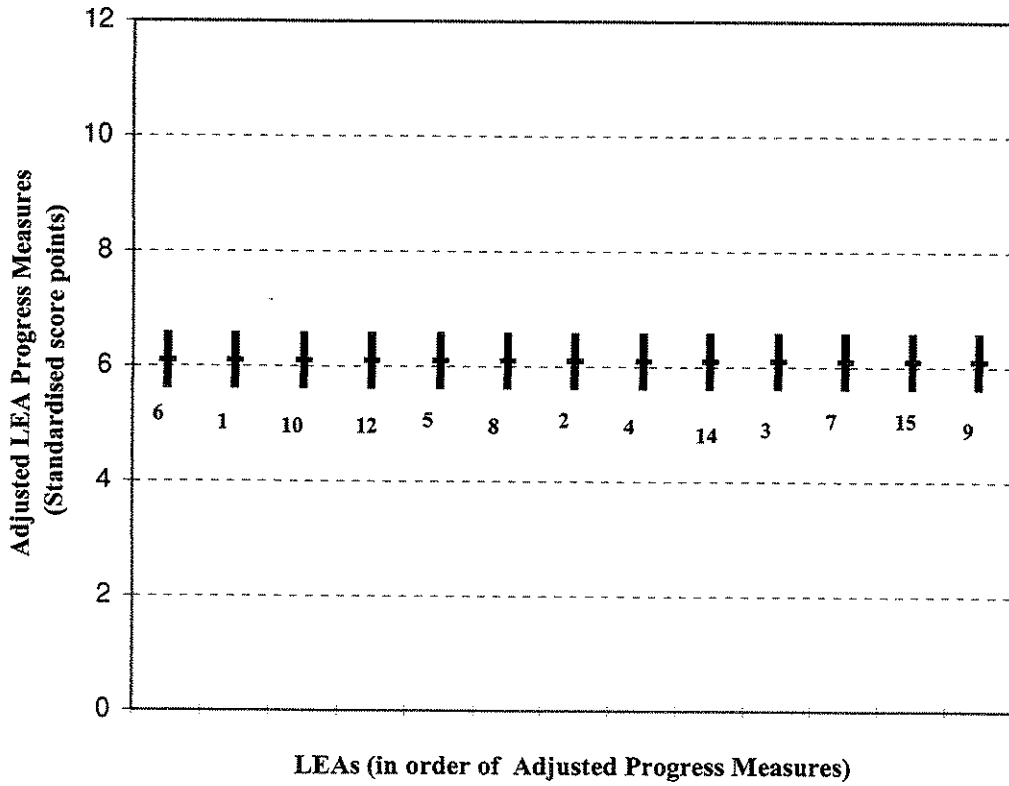


Figure 13: Adjusted LEA Progress Measures (Overall Score) for Cohort 1 Year 3, showing 95% confidence intervals

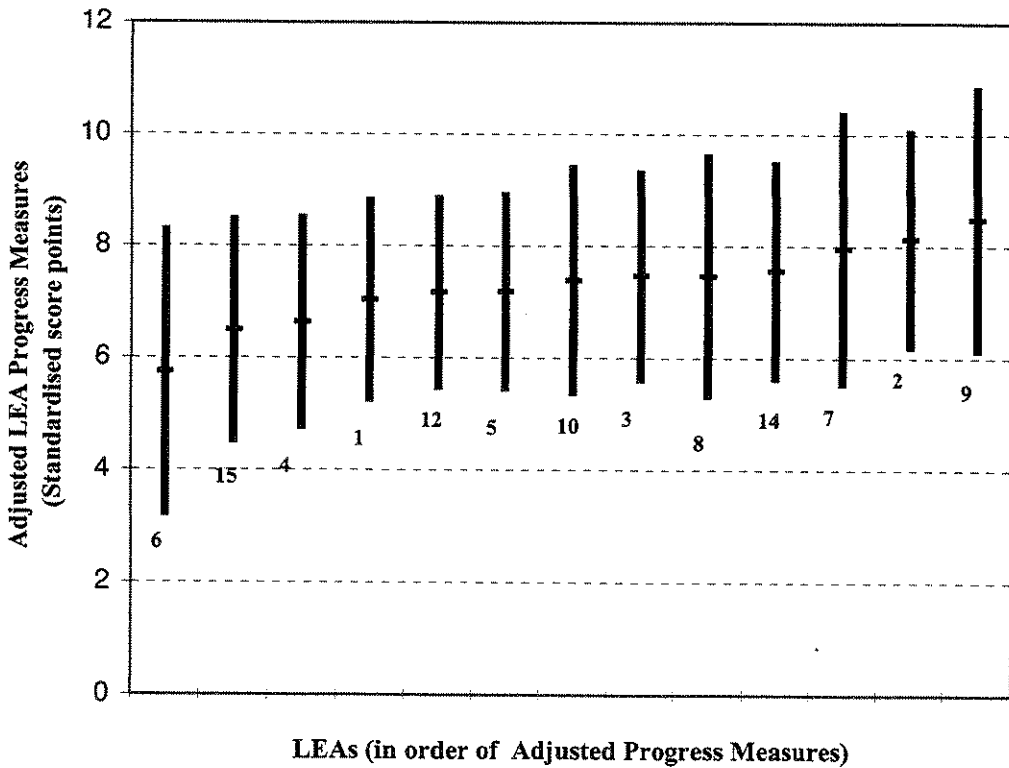


Figure 14: Adjusted LEA Progress Measures (Overall Score) for Cohort 1 Year 4, showing 95% confidence intervals

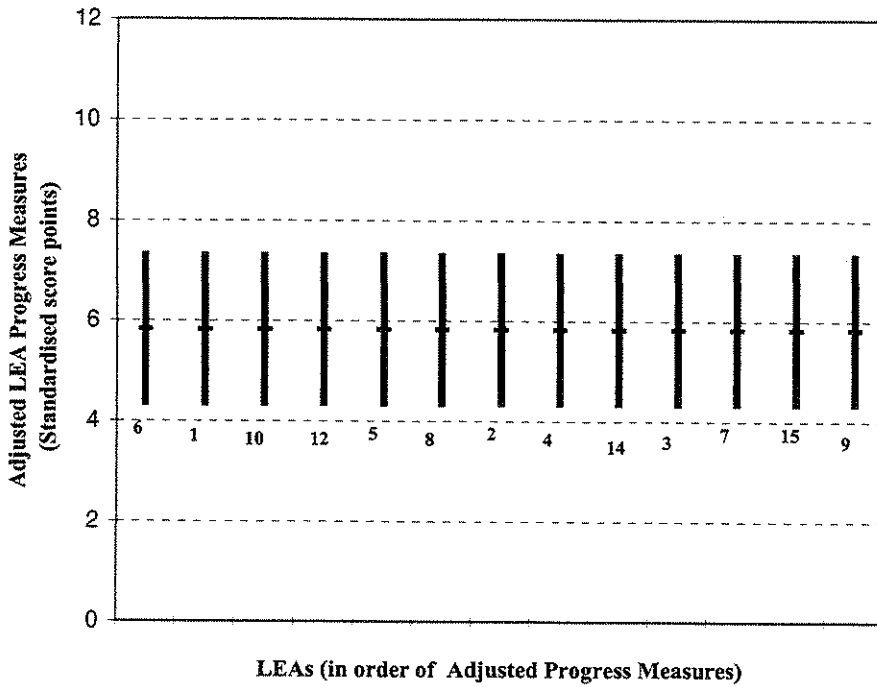
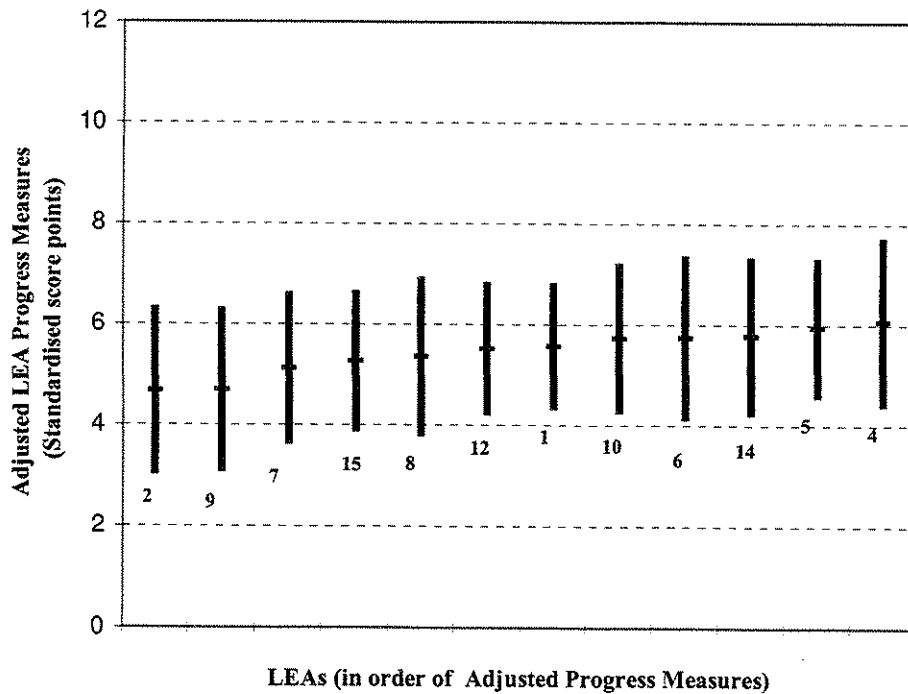


Figure 15: Adjusted LEA Progress Measures (Overall Score) for Cohort 1 Year 6, showing 95% confidence intervals



It should be noted in the above figures that there is very little difference between LEAs in terms of progress measures; in some cases the multilevel model estimated the LEA-level progress measures to be identical.

Table 1: Details of Variables Used in Multilevel Modelling

Name	Range		Description
	Min.	Max.	
LEA	204	888	LEA identifier
SCHOOL	1	216	School ID
YEAR	3	6	Year Group
PUPILID	2001	7072	Pupil ID
ROUND	1	3	Round of testing
SWSCORE	69	131	Written Standardised score
SMSCORE	69	131	Mental Standardised score
SOSCORE	69	131	Overall Standardised score
VOLUNT	0	1	Voluntary school
KS1TIME	21	24	KS1- Hours of lessons per week
KS2TIME	22	25	KS2- Hours of lessons per week
KS1MTIME	5	8	KS1- Hours of Maths lessons per week
KS2MTIME	5	8	KS2- Hours of Maths lessons per week
MAT1TIME	1	5	Time dedicated to MATHS at KS1
MAT2TIME	1	6	Time dedicated to MATHS at KS2
PSEN	1	80	Percentage of SEN pupils
PMATHS	0	10	Percentage of teachers with MATHS degree
PNENG	0	99	Percentage of pupils with 1st language not English
PFSM	2	96	Percentage of pupils receiving Free school meals
PPTR	3	29	Pupil teacher ratio
PDEGREE	0	93	Percentage of teachers with degree
PUNQUAL	0	23	Percentage of teachers unqualified
NOR	35	785	School number on roll
SEX	0	2	Sex (0 = male, 2 = female)
AGE	77	141	Age in months
PRIMARY	0	21	Terms of primary education
NONUK	0	1	Non-UK education
SEN	0	1	Special educational needs
FSM	0	1	Free school meals
STAGE	1	5	Stage of English fluency
ETHNIC2	0	1	Black Caribbean
ETHNIC3	0	1	Black African
ETHNIC4	0	1	Black Other
ETHNIC5	0	1	Indian
ETHNIC6	0	1	Pakistani
ETHNIC7	0	1	Bangladeshi
ETHNIC8	0	1	Chinese
CONS	1	1	Constant term
YEAR3	0	1	In Year 3
YEAR4	0	1	In Year 4
YEAR6	0	1	In Year 6

Table 1 (continued)

Name	Range		Description
	Min.	Max.	
SEXINT	-0.5	0.5	Interaction term - sex by time
OSCORINT	-50.5	50.5	Interaction term – prior score by time
MAT1INT	-1.13	1.13	Interaction term – KS1 Maths by time
MAT2INT	-1.63	1.63	Interaction term – KS2 Maths by time
VOLINT	-0.39	0.39	Interaction term – Vol. school by time
HTINT1	-25.5	25.5	HTQ interaction term - 5-day course
HTINT2	-28.5	28.5	HTQ interaction term - Training & consultancy
HTINT3	-21.5	21.5	HTQ interaction term - Framework & internal audit
HTINT4	-18.5	18.5	HTQ interaction term - Project materials
CLASS	10	40	Class size
CLASSSQ	100	1600	Class size squared
CLASSINT	-9	9	Interaction term - class size by time
CLSQTINT	-367	87	Interaction term - class size squared by time

Table 2: Numbers of LEAs, Schools and Pupils in Each Model

Model	LEAs	Schools	Pupils
All years (unified)	13	199	23,265
Year 3	13	184	7622
Year 4	13	190	7800
Year 6	12	176	7763

Table 3: Detailed Results of Multilevel Analysis of Written Test Score for All Year groups

Parameter	Estimate	Standard error	Sig.	95% Confidence interval	
				Min.	Max.
Base case					
LEA variance	1.929	1.400		-0.815	4.673
School variance	20.020	2.499	*	15.122	24.918
Year variance	5.694	0.774	*	4.178	7.210
Pupil variance	154.600	1.655	*	151.356	157.844
Round variance	53.280	0.378	*	52.540	54.020
Final model					
LEA variance	0.000	0.000		0.000	0.000
LEA slope covar.	0.000	0.000		0.000	0.000
LEA slope var.	0.000	0.000		0.000	0.000
School variance	13.800	2.346	*	9.202	18.398
School slope covar.	-1.086	0.979		-3.005	0.833
School slope var.	7.534	0.837	*	5.894	9.174
Year variance	19.310	1.765	*	15.851	22.769
Pupil variance	133.400	1.422	*	130.613	136.187
Round variance	44.280	0.315	*	43.663	44.897
Fixed coefficients					
CONS	75.390	3.154	*	69.208	81.572
ROUND2	2.777	0.067	*	2.646	2.908
ROUND3	4.839	0.210	*	4.427	5.251
YEAR4	-0.037	0.505		-1.027	0.953
YEAR6	-2.537	0.521	*	-3.559	-1.515
SEX	-0.337	0.082	*	-0.498	-0.177
NONUK	-1.711	0.730	*	-3.143	-0.279
SEN	-15.590	0.560	*	-16.688	-14.492
FSM	-4.330	0.189	*	-4.700	-3.960
STAGE	1.946	0.123	*	1.705	2.187
ETHNIC2	-1.407	0.467	*	-2.323	-0.491
ETHNIC3	0.713	0.648		-0.556	1.982
ETHNIC4	1.082	0.827		-0.539	2.703
ETHNIC5	3.254	0.490	*	2.293	4.215
ETHNIC6	0.683	0.481		-0.259	1.626
ETHNIC7	1.333	0.553	*	0.249	2.417
ETHNIC8	8.409	1.190	*	6.077	10.741
VOLUNT	1.950	0.799	*	0.383	3.517
PFSM	-0.077	0.018	*	-0.113	-0.041
PPTR	-0.362	0.096	*	-0.549	-0.174
SEXINT	-0.194	0.067	*	-0.325	-0.063
OSCORINT	-0.029	0.003	*	-0.034	-0.024
VOLINT	1.699	0.284	*	1.143	2.255
HTINT2	0.029	0.010	*	0.010	0.048
HTINT3	0.025	0.010	*	0.006	0.044
CLASS	0.462	0.162	*	0.144	0.780
CLASSSQ	0.015	0.003	*	0.008	0.021

Table 4: Detailed Results of Multilevel Analysis of Mental Test Score for All Year groups

Parameter	Estimate	Standard error	Sig.	95% Confidence interval	
				Min.	Max.
Base case					
LEA variance	2.101	1.423		-0.688	4.890
School variance	17.840	2.308	*	13.316	22.364
Year variance	6.552	0.835	*	4.915	8.189
Pupil variance	139.600	1.636	*	136.393	142.807
Round variance	84.040	0.598	*	82.868	85.212
Final model					
LEA variance	0.000	0.000		0.000	0.000
LEA slope covar.	0.000	0.000		0.000	0.000
LEA slope var.	0.053	0.252		-0.441	0.547
School variance	12.700	2.300	*	8.192	17.208
School slope covar.	-1.219	1.013		-3.204	0.766
School slope var.	7.870	0.940	*	6.028	9.712
Year variance	20.540	1.858	*	16.898	24.182
Pupil variance	121.900	1.411	*	119.134	124.666
Round variance	68.710	0.490	*	67.749	69.671
Fixed coefficients					
CONS	77.760	3.257	*	71.376	84.144
ROUND2	3.888	0.084	*	3.724	4.052
ROUND3	6.974	0.231	*	6.522	7.426
YEAR4	-0.114	0.517		-1.128	0.900
YEAR6	-1.032	0.534		-2.078	0.014
SEX	-0.719	0.081	*	-0.878	-0.559
NONUK	-2.242	0.733	*	-3.678	-0.806
SEN	-16.090	0.559	*	-17.185	-14.995
FSM	-3.823	0.188	*	-4.191	-3.455
STAGE	2.013	0.123	*	1.771	2.255
ETHNIC2	-0.326	0.466		-1.238	0.587
ETHNIC3	1.587	0.645	*	0.322	2.852
ETHNIC4	1.337	0.824		-0.278	2.952
ETHNIC5	3.390	0.489	*	2.431	4.349
ETHNIC6	1.139	0.484	*	0.190	2.088
ETHNIC7	1.053	0.553		-0.032	2.138
ETHNIC8	6.813	1.182	*	4.496	9.130
VOLUNT	1.706	0.793	*	0.152	3.260
PSEN	-0.036	0.032		-0.099	0.026
PNENG	-0.028	0.014	*	-0.056	0.000
PFSM	-0.070	0.021	*	-0.110	-0.030
PPTR	-0.410	0.096	*	-0.599	-0.221
PUNQUAL	0.209	0.120		-0.026	0.443
OSCORINT	-0.014	0.004	*	-0.021	-0.007
CLASS	0.369	0.162	*	0.053	0.686
CLASSSQ	0.016	0.003	*	0.009	0.022

Table 5: Detailed Results of Multilevel Analysis of Overall Test Score for All Year groups

Parameter	Estimate	Standard error	Sig.	95% Confidence interval	
				Min.	Max.
Base case					
LEA variance	2.113	1.490		-0.807	5.033
School variance	20.530	2.559	*	15.514	25.546
Year variance	5.734	0.785	*	4.196	7.272
Pupil variance	159.500	1.693	*	156.182	162.818
Round variance	50.480	0.360	*	49.774	51.186
Final model					
LEA variance	0.000	0.000		0.000	0.000
LEA slope covar.	0.000	0.000		0.000	0.000
LEA slope var.	0.000	0.000		0.000	0.000
School variance	13.800	2.420	*	9.057	18.543
School slope covar.	-0.571	0.958		-2.449	1.307
School slope var.	7.123	0.784	*	5.586	8.660
Year variance	20.840	1.894	*	17.128	24.552
Pupil variance	139.900	1.458	*	137.042	142.758
Round variance	37.320	0.267	*	36.796	37.844
Fixed coefficients					
CONS	61.460	13.560	*	34.882	88.038
ROUND2	3.929	0.062	*	3.807	4.051
ROUND3	6.215	0.203	*	5.817	6.613
YEAR4	-0.273	0.522		-1.296	0.751
YEAR6	-2.188	0.539	*	-3.244	-1.132
SEX	-0.505	0.083	*	-0.667	-0.342
NONUK	-2.268	0.737	*	-3.713	-0.823
SEN	-16.280	0.568	*	-17.392	-15.168
FSM	-4.335	0.191	*	-4.709	-3.961
STAGE	2.046	0.124	*	1.802	2.290
ETHNIC2	-1.029	0.474	*	-1.957	-0.101
ETHNIC3	1.047	0.656		-0.238	2.332
ETHNIC4	1.139	0.837		-0.502	2.780
ETHNIC5	3.412	0.497	*	2.438	4.386
ETHNIC6	0.848	0.488		-0.108	1.803
ETHNIC7	1.175	0.561	*	0.075	2.275
ETHNIC8	8.064	1.205	*	5.702	10.426
VOLUNT	1.925	0.818	*	0.322	3.528
KS2TIME	0.603	0.550		-0.476	1.681
PSEN	-0.043	0.032		-0.106	0.021
PFSM	-0.076	0.020	*	-0.114	-0.037
PPTR	-0.404	0.098	*	-0.597	-0.211
SEXINT	-0.122	0.062	*	-0.244	-0.001
OSCORINT	-0.041	0.003	*	-0.047	-0.035
VOLINT	1.300	0.265	*	0.780	1.820
HTINT3	0.022	0.009	*	0.004	0.040
HTINT4	0.017	0.009		-0.001	0.035
CLASS	0.443	0.165	*	0.121	0.766
CLASSSQ	0.016	0.003	*	0.009	0.022

Table 6: Detailed Results of Multilevel Analysis of Overall Test Score for Year 3

Parameter	Estimate	Standard error	Sig.	95% Confidence interval	
				Min.	Max.
Base case					
LEA variance	0.258	1.015		-1.732	2.247
School variance	28.040	3.558	*	21.066	35.014
Pupil variance	152.700	2.922	*	146.973	158.427
Round variance	59.770	0.755	*	58.290	61.250
Final model					
LEA variance	0.000	0.000		0.000	0.000
LEA slope covar.	0.000	0.000		0.000	0.000
LEA slope var.	0.638	0.847		-1.021	2.298
School variance	46.920	5.374	*	36.387	57.453
School slope covar.	-12.270	2.814	*	-17.785	-6.755
School slope var.	22.200	2.613	*	17.079	27.321
Pupil variance	138.100	2.539	*	133.124	143.076
Round variance	39.270	0.500	*	38.290	40.250
Fixed coefficients					
CONS	72.720	3.767	*	65.337	80.103
ROUND2	5.031	0.113	*	4.811	5.252
ROUND3	6.339	0.437	*	5.483	7.195
SEX	-0.427	0.144	*	-0.710	-0.143
PRIMARY	1.052	0.092	*	0.872	1.232
NONUK	0.856	1.512		-2.108	3.820
SEN	-17.570	1.114	*	-19.753	-15.387
FSM	-4.237	0.334	*	-4.891	-3.583
STAGE	2.233	0.220	*	1.801	2.665
ETHNIC2	-2.564	0.840	*	-4.210	-0.918
ETHNIC3	0.960	1.129		-1.253	3.173
ETHNIC4	-0.589	1.542		-3.611	2.434
ETHNIC5	4.031	0.909	*	2.250	5.812
ETHNIC6	-0.632	0.882		-2.361	1.096
ETHNIC7	0.158	0.961		-1.724	2.041
ETHNIC8	7.886	2.157	*	3.658	12.114
VOLUNT	2.164	1.157		-0.104	4.432
PFSM	-0.109	0.028	*	-0.163	-0.055
PPTR	-0.509	0.141	*	-0.785	-0.233
PUNQUAL	0.285	0.176		-0.060	0.630
SEXINT	-0.473	0.113	*	-0.694	-0.251
OSCORINT	-0.065	0.005	*	-0.075	-0.054
HTINT1	0.077	0.017	*	0.044	0.109
CLASSSQ	0.022	0.001	*	0.020	0.025

Table 7: Detailed Results of Multilevel Analysis of Overall Test Score for Year 4

Parameter	Estimate	Standard error	Sig.	95% Confidence interval	
				Min.	Max.
Base case					
LEA variance	2.613	1.878		-1.068	6.294
School variance	25.250	3.211	*	18.956	31.544
Pupil variance	157.500	2.893	*	151.830	163.170
Round variance	52.860	0.647	*	51.592	54.128
Final model					
LEA variance	0.000	0.000		0.000	0.000
LEA slope covar.	0.000	0.000		0.000	0.000
LEA slope var.	0.000	0.000		0.000	0.000
School variance	24.710	3.001	*	18.828	30.592
School slope covar.	1.345	1.679		-1.946	4.636
School slope var.	16.680	1.878	*	12.999	20.361
Pupil variance	142.500	2.518	*	137.565	147.435
Round variance	32.910	0.406	*	32.115	33.705
Fixed coefficients					
CONS	52.820	14.750	*	23.910	81.730
ROUND2	3.305	0.100	*	3.109	3.501
ROUND3	7.328	0.317	*	6.706	7.950
SEX	-0.513	0.143	*	-0.794	-0.232
PRIMARY	-0.081	0.127		-0.330	0.169
NONUK	-4.374	1.217	*	-6.759	-1.989
SEN	-15.990	0.948	*	-17.847	-14.133
FSM	-4.290	0.328	*	-4.933	-3.647
STAGE	1.930	0.201	*	1.535	2.325
ETHNIC2	-1.111	0.822		-2.722	0.500
ETHNIC3	0.268	1.134		-1.955	2.490
ETHNIC4	2.444	1.316		-0.135	5.023
ETHNIC5	2.713	0.826	*	1.093	4.333
ETHNIC6	0.864	0.820		-0.743	2.472
ETHNIC7	2.267	0.960	*	0.386	4.148
ETHNIC8	5.983	1.888	*	2.283	9.683
VOLUNT	2.582	0.946	*	0.727	4.437
KS2TIME	0.898	0.612		-0.302	2.097
PFSM	-0.049	0.020	*	-0.088	-0.010
SEXINT	-0.307	0.101	*	-0.505	-0.110
OSCORINT	-0.036	0.005	*	-0.046	-0.027
VOLINT	2.316	0.424	*	1.486	3.146
HTINT2	0.018	0.015		-0.011	0.046
CLASSSQ	0.022	0.001	*	0.020	0.024
CLASSINT	0.162	0.030	*	0.102	0.221

Table 8: Detailed Results of Multilevel Analysis of Overall Test Score for Year 6

Parameter	Estimate	Standard error	Sig.	95% Confidence interval	
				Min.	Max.
Base case					
LEA variance	4.496	2.569		-0.539	9.531
School variance	19.790	2.733	*	14.433	25.147
Pupil variance	167.600	2.979	*	161.761	173.439
Round variance	39.380	0.482	*	38.435	40.325
Final model					
LEA variance	2.059	1.861		-1.589	5.707
LEA slope covar.	-1.306	0.918		-3.105	0.493
LEA slope var.	0.518	0.685		-0.824	1.861
School variance	31.380	3.948	*	23.642	39.118
School slope covar.	-2.578	1.930		-6.361	1.205
School slope var.	15.510	1.858	*	11.868	19.152
Pupil variance	140.500	2.462	*	135.674	145.326
Round variance	27.510	0.339	*	26.845	28.175
Fixed coefficients					
CONS	42.140	17.520	*	7.801	76.479
ROUND2	3.571	0.091	*	3.392	3.750
ROUND3	5.199	0.379	*	4.455	5.943
SEX	-0.617	0.142	*	-0.894	-0.339
PRIMARY	0.084	0.102		-0.117	0.284
NONUK	-0.495	1.225		-2.896	1.906
SEN	-15.150	0.909	*	-16.931	-13.369
FSM	-4.329	0.328	*	-4.973	-3.685
STAGE	1.866	0.227	*	1.421	2.311
ETHNIC2	0.435	0.781		-1.096	1.967
ETHNIC3	2.039	1.124		-0.164	4.242
ETHNIC4	1.412	1.511		-1.550	4.374
ETHNIC5	3.499	0.833	*	1.866	5.132
ETHNIC6	2.111	0.798	*	0.548	3.674
ETHNIC7	1.660	0.950		-0.202	3.522
ETHNIC8	11.300	2.264	*	6.863	15.737
KS2TIME	0.780	0.711		-0.613	2.173
PSEN	-0.075	0.043		-0.159	0.010
PFSM	-0.078	0.026	*	-0.130	-0.027
PPTR	-0.380	0.132	*	-0.639	-0.120
SEXINT	0.320	0.092	*	0.140	0.501
OSCORINT	-0.028	0.005	*	-0.037	-0.018
HTINT1	0.041	0.013	*	0.015	0.067
HTINT2	0.038	0.013	*	0.011	0.064
CLASS	1.372	0.049	*	1.276	1.468
CLASSINT	0.119	0.028	*	0.064	0.175

Cohort 2 (Entry and Progress)

Summary

- There is a statistically significant increase in age-standardised test scores between Round 1 (entry) and Round 2 (progress) testing. This applies to all three test scores and all year groups.
- The variables with apparently positive relationships with test score are stage of English fluency, being a voluntary aided or controlled school, and class size. Background variables with apparently negative relationships with test scores include sex (girls having lower scores than boys, on average), SEN level, eligibility for free school meals and percentage eligible for free school meals.
- Looking at interaction terms, it seems that progress from Round 1 to Round 2 is positively related to class size, and negatively to sex (girls make on average less progress than boys) and original score.
- Considering year groups separately, in general the same relationships as above were found, with some minor variations.
- In all cases, there was a significant apparent impact of Project schools against Control schools. An attempt to allow for apparent 'contamination' of the Control schools by Numeracy Project ideas made little or no difference to this finding.

The Model for Cohort 2

The second round of data collection for Cohort 2 of the National Numeracy Project included background data, and baseline and progress scores for pupils in Years 2, 3 and 5. The following types of data were collected:

- Raw and standardised scores on mathematics tests at entry and at the end of the academic year (different tests for each Year);
- Pupil background data;
- School background data;
- School-level data on factors such as time devoted to mathematics etc.

Table 9 contains details of all the variables derived from the data collection exercise which were used in this phase of multilevel analysis. The aim of the analysis was to investigate factors at the school and pupil levels which might be associated with mathematics scores, and to see which were apparently statistically significant. It was also possible to carry out an analysis of progress, making use of the fact that standardised scores were available at two different time-points for most pupils. This analysis depends critically, of course, on the assumption that the standardisations were carried out in a comparable fashion at the two time-points.

In addition to the normal school and pupil background data, results from questionnaires to headteachers were available, in the form of factor scores representing the perceived usefulness of various aspects of the Project. These were included to investigate any apparent relationships with progress.

Also included in the analysis was comparable data from a Control Group of schools to allow investigation of the impact of the Project. The Control Group data consisted of raw and standardised scores, pupil background data, school background data and school-level factors, as in the Project, for pupils in Years 2, 3 and 5.

Results of Multilevel Analysis

Tables 11 to 16 show some of the detailed results of the multilevel model fitting to various datasets: all years combined for each of three outcomes, and Years 2, 3 and 5 for overall score only. In technical language, these tables show the random variances at each level at each stage of model fitting, plus the coefficients of the background variables in the 'full model'. They also show whether or not variances or coefficients are statistically significant at the 5% level, as well as 95% confidence intervals for each parameter.

These tables, although they show the full results of all the modelling carried out at this stage, may not be easy to interpret for all readers. To help with this, therefore, the coefficients which express the estimated relationships between test scores and each of the background variables have been converted into 'effect sizes' which represent the 'strength' of each relationship as a percentage, and which allow the different variables to be compared in terms of their apparent influence on the test outcome, when all other variables are simultaneously taken into account.

Effect sizes are plotted in Figures 16 to 21, for the six different models described in Tables 11 to 16. For each variable, the estimated effect size is plotted as a diamond, with a vertical line indicating the 95% confidence interval for the estimate. Any variable whose line intersects the horizontal zero axis can be regarded as not statistically significant (at the 5% level). Positive values imply a positive relationship with the test score outcome; negative values imply that test score tend to decrease with higher values of the given background variable.

The way in which these models have been set up means that most of the effects relate to overall performance in various aspects of mathematics, over both testing periods. Thus the strong positive relationship with stage of English fluency implies that mathematics scores as a whole are related to this factor, but does not tell us anything about progress from one time point to another. To measure the latter, we need to include 'interaction terms' in the model, which relate background factors to changes over time in scores.

Ten such 'interaction terms' were included in the model, to look at the relationships between background variables (including headteacher questionnaire factors) and progress:

- **SEXINT:** Relationship between females and progress;
- **OSCORINT:** Relationship between overall score on entry and progress;
- **MAT1INT:** Relationship between time dedicated to mathematics at KS1 and progress;
- **MAT2INT:** Relationship between time dedicated to mathematics at KS2 and progress;
- **VOLINT:** Relationship between voluntary sector schools and progress;
- **HTINT1:** Relationship between usefulness of the 5-day course and progress;
- **HTINT2:** Relationship between usefulness of the consultancy and progress;
- **HTINT3:** Relationship between usefulness of the framework and internal audit and progress;
- **HTINT4:** Relationship between usefulness of the project materials and progress;
- **CLASSINT:** Relationship between class size and progress.

The interpretation of the model results for these variables is straightforward. If, for example, the coefficient of SEXINT is negative, this implies that girls are making less progress than boys on average. A positive coefficient for VOLINT would imply that pupils in voluntary

schools are making more progress than others, and so forth. Note that we would expect a negative coefficient for OSCORINT, as this implies that those starting from a higher score are likely to make less progress on average.

In order to evaluate the effect of the Project, extra variables were included in the model, (INNP1, INNP2 and INNP3). INNP1 describes the apparent impact of the Project compared to the Control Group by assigning the value 1 to the Project and 0 to the Control group at the second round. INNP2 and INNP3 try to allow for contamination of Control Group schools based on a headteacher proforma. This proforma asked schools whether they possessed any Project materials or had attended any Project courses. INNP2 and INNP3 evaluate the responses to these questions by assigning a 'scale of contamination' to the Control Group schools.

Figure 16: Effect Sizes from Multilevel Model fitted to Written Test Scores for All Year Groups

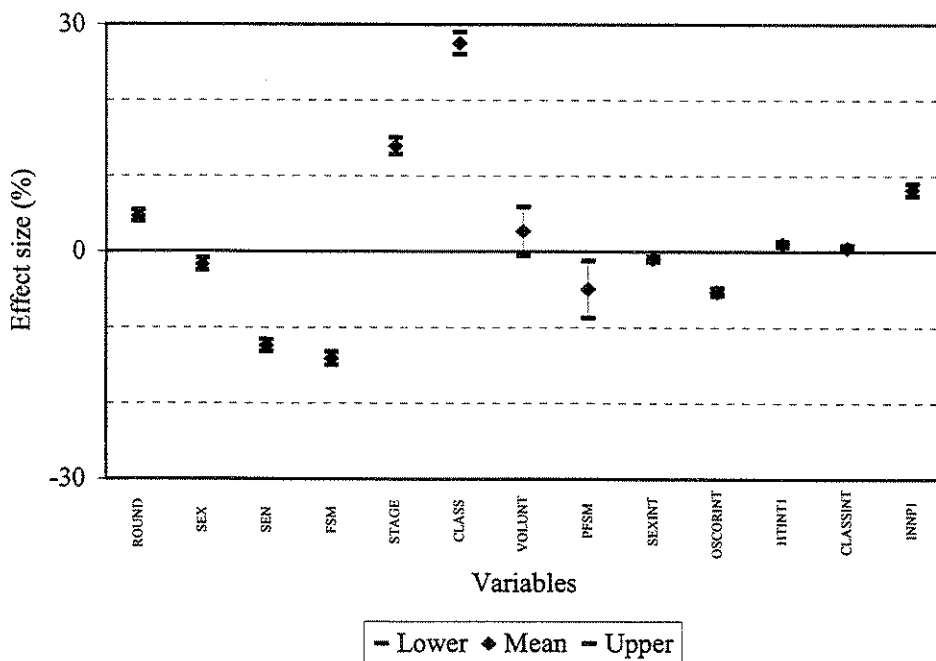


Figure 17: Effect Sizes from Multilevel Model fitted to Mental Test Scores for All Year Groups

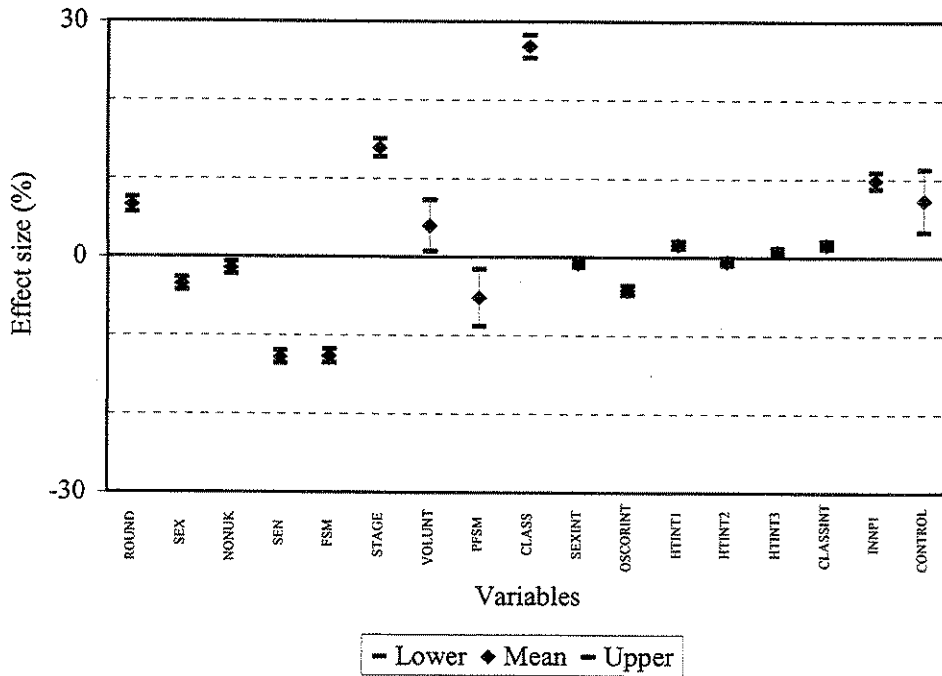
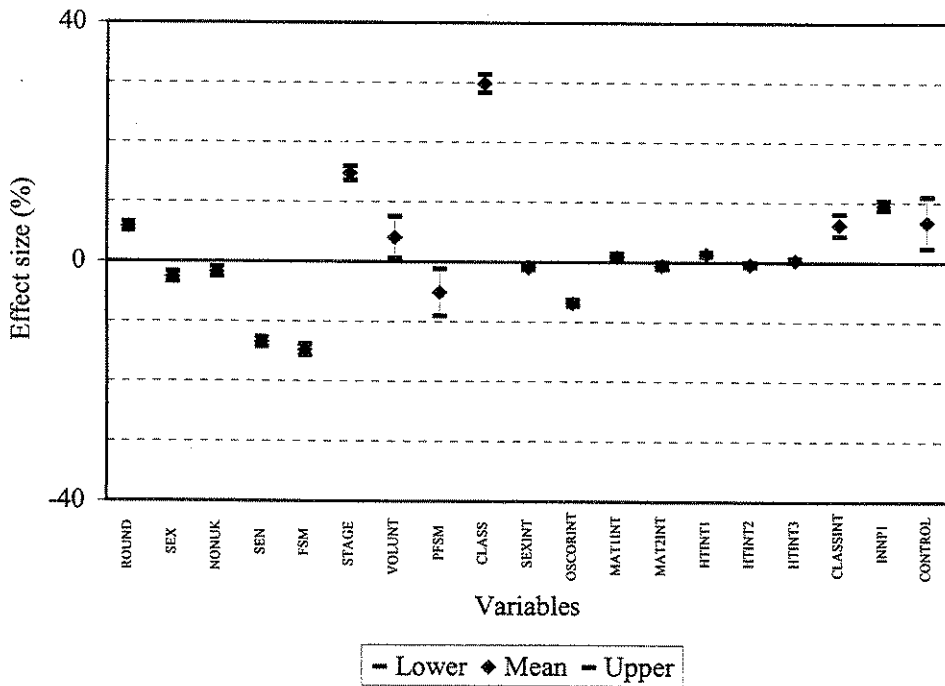


Figure 18: Effect Sizes from Multilevel Model fitted to Overall Test Scores for All Year Groups



In Figures 16 to 18, above, it is clear that the variables with apparently positive relationships with test score are round of testing (with significantly higher age-standardised scores in Round 2 compared with Round 1), stage of English fluency, being a voluntary aided or controlled school and class size. Background variables with apparently negative relationships with test scores include sex (girls having lower scores than boys, on average), SEN level, eligibility for free school meals and percentage eligible for free school meals.

Looking at interaction terms, it seems that progress from Round 1 to Round 2 is positively related to class size, and negatively to sex (girls make on average less progress than boys), and original score. Factors 1 (5-day course) and 3 (framework & internal audit) from the headteacher questionnaire were overall positively related to progress in mental and overall scores. Factor 1 was positively related to progress in written scores.

Some of the relationships displayed here will be intuitively reasonable, and others may be less so. Some may be artefacts, or produced through a relationship with a third factor not included in the model. The other three figures, for Years 2 to 5, will show some of the same patterns and some which are different.

Figure 19: Effect Sizes from Multilevel Model fitted to Overall Test Scores for Year 2

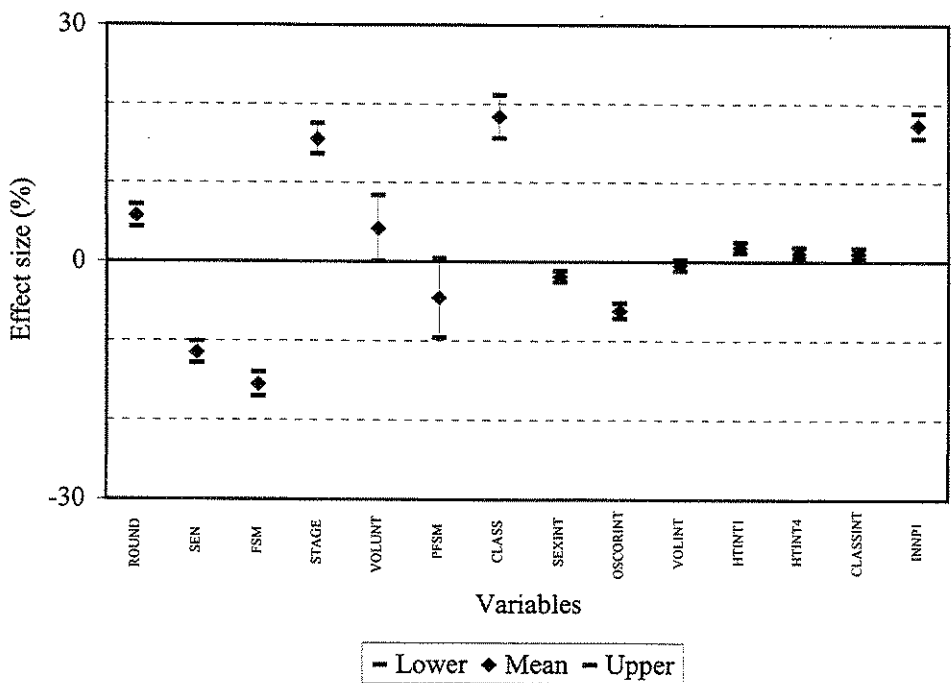


Figure 20: Effect Sizes from Multilevel Model fitted to Overall Test Scores for Year 3

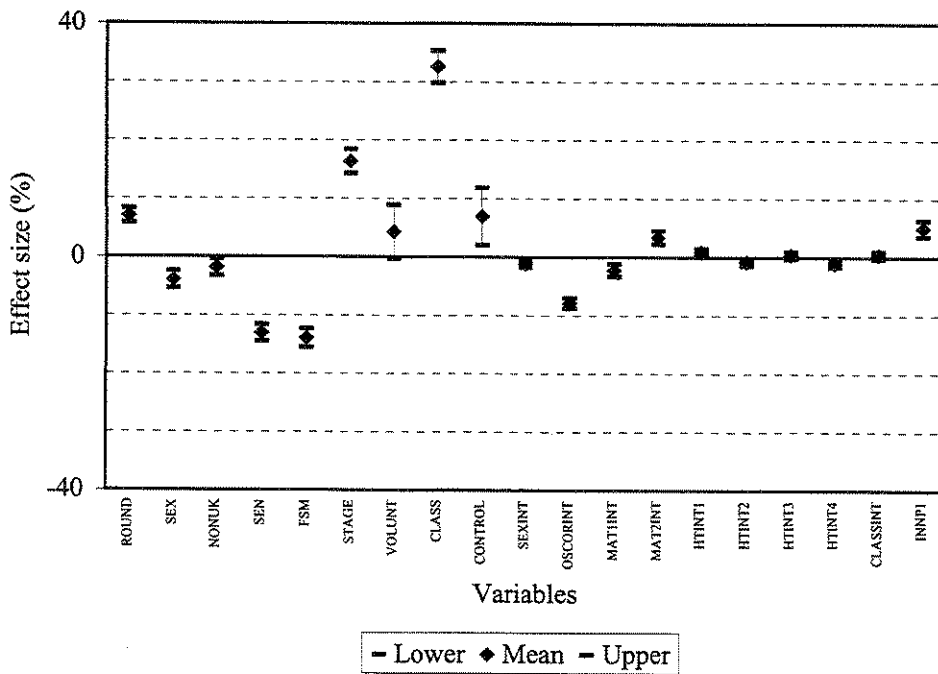
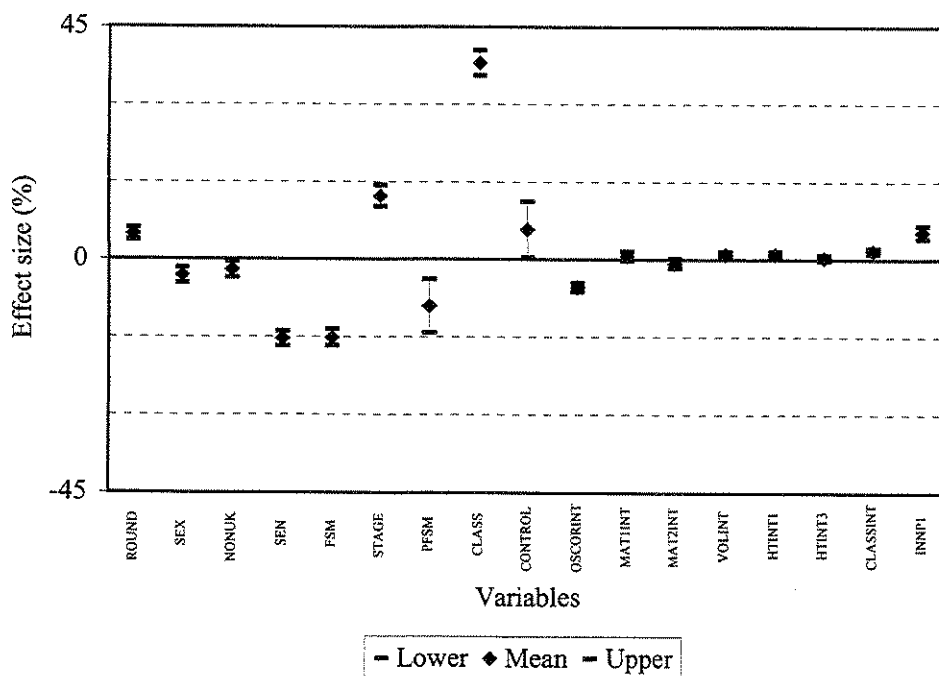


Figure 21: Effect Sizes from Multilevel Model fitted to Overall Test Scores for Year 5



In addition to the relationships between test scores and a host of background variables described above, the multilevel model provides other information. In particular, it estimates the amount of variation in test scores which can be attributed to different levels in the model. The unified model had five levels: LEA, school, cohort and pupil, and there will in general be measurable differences in average test scores between units at each level. The amount of variation at each level is measured by the 'variance' (basically the square of the standard deviation) at that level, and may change as extra background variables are fitted to the model. For example, some of the differences between schools in average test scores may be eliminated when we take into account school-level variables such as percentage eligible for free school meals.

The model allows us to estimate for each school or LEA a 'residual', which is the amount by which its results differ from what might have been expected, given all the pupil and school background data. Figures 22 to 25 show the residuals for all the LEAs with schools in the project for overall test score, for all year groups combined and for Years 2, 3 and 5 separately. The plots indicate by a vertical line the 95% confidence interval for each LEA's residual value. Only those LEAs whose lines do not intersect the horizontal zero axis might be regarded as having results significantly different from expected.

Figure 22: Adjusted LEA Residuals (Overall Score) for Cohort 2, All Year Groups, showing 95% confidence intervals

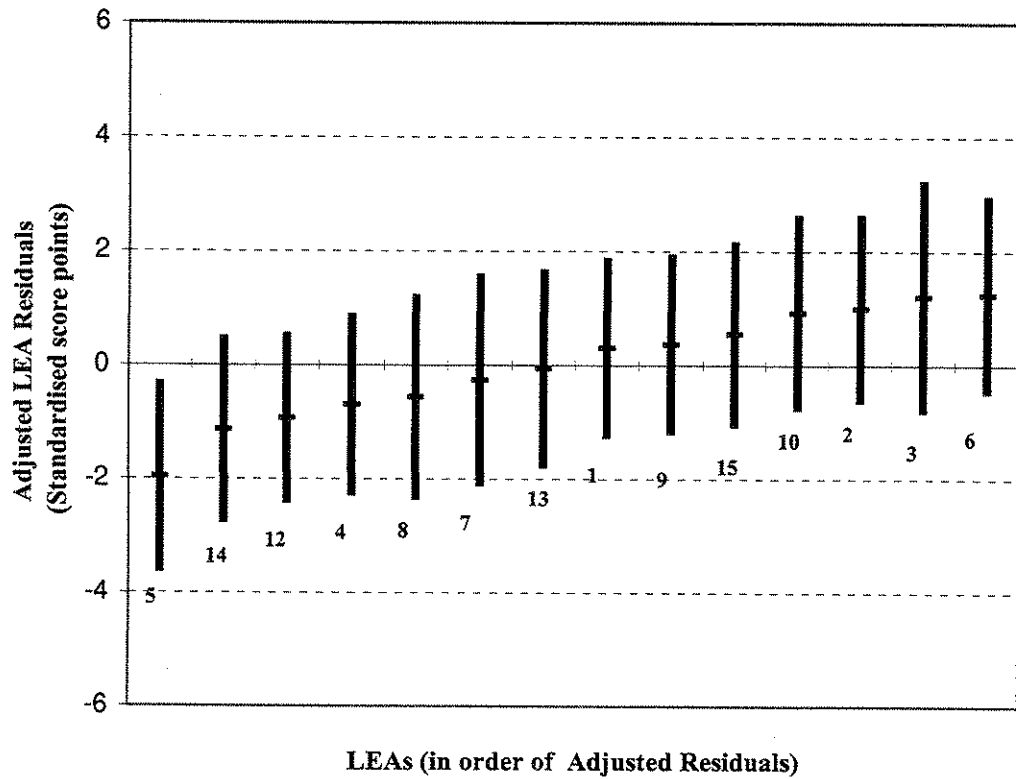


Figure 23: Adjusted LEA Residuals (Overall Score) for Cohort 2 Year 2, showing 95% confidence intervals

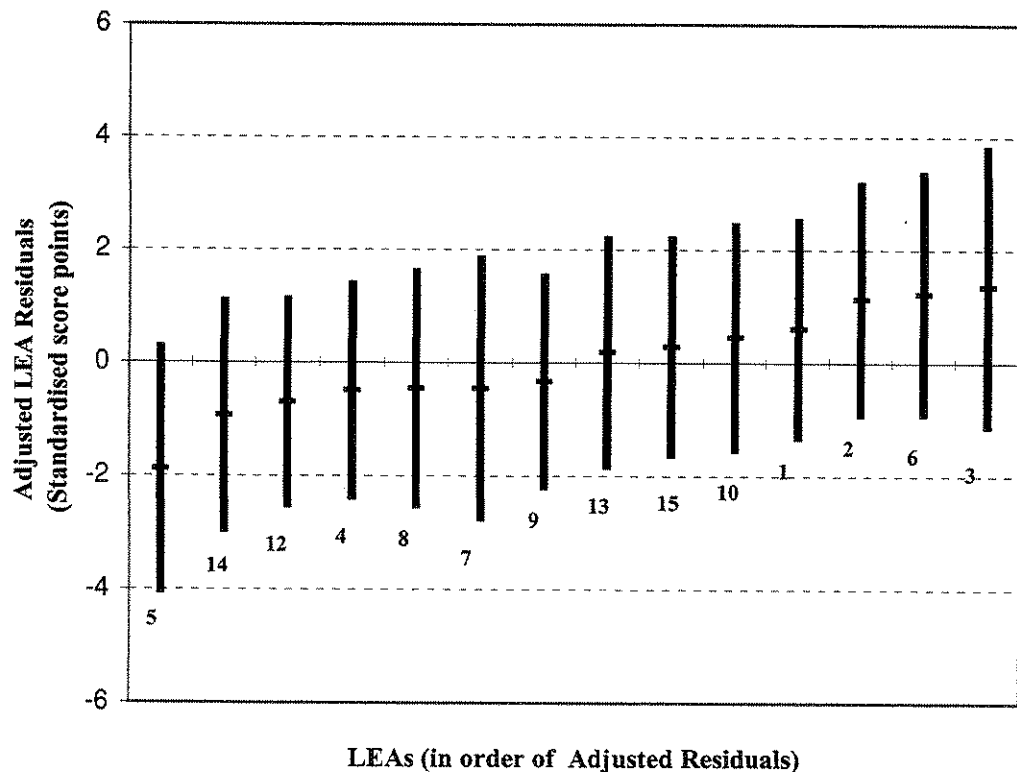


Figure 24: Adjusted LEA Residuals (Overall Score) for Cohort 2 Year 3, showing 95% confidence intervals

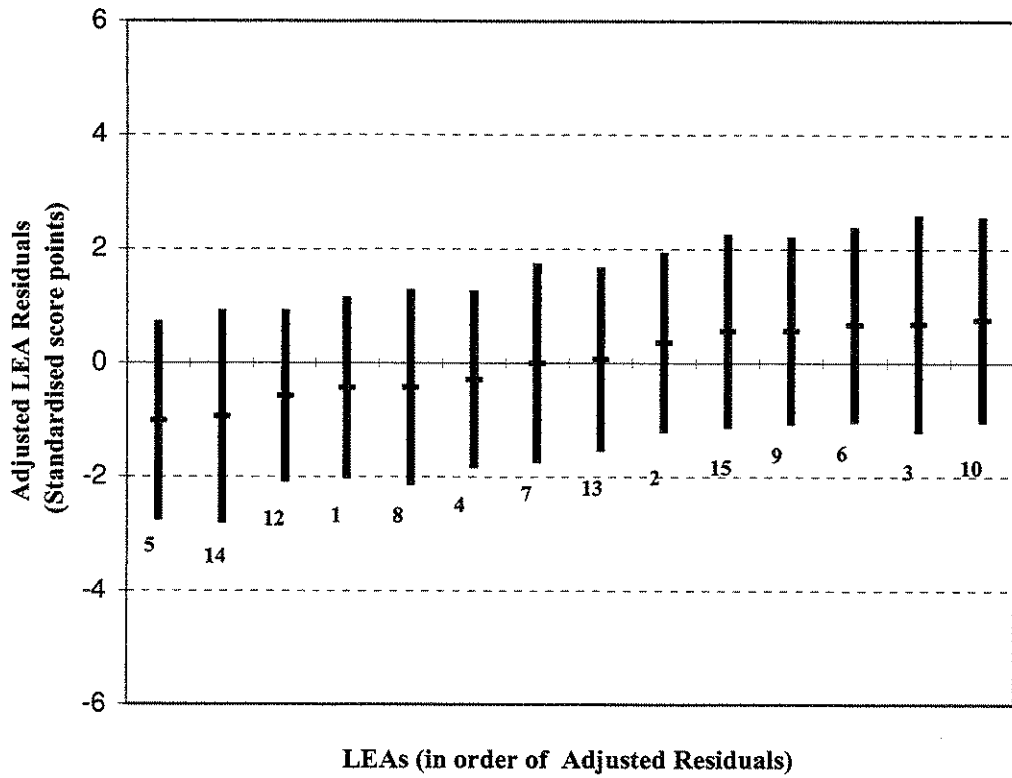
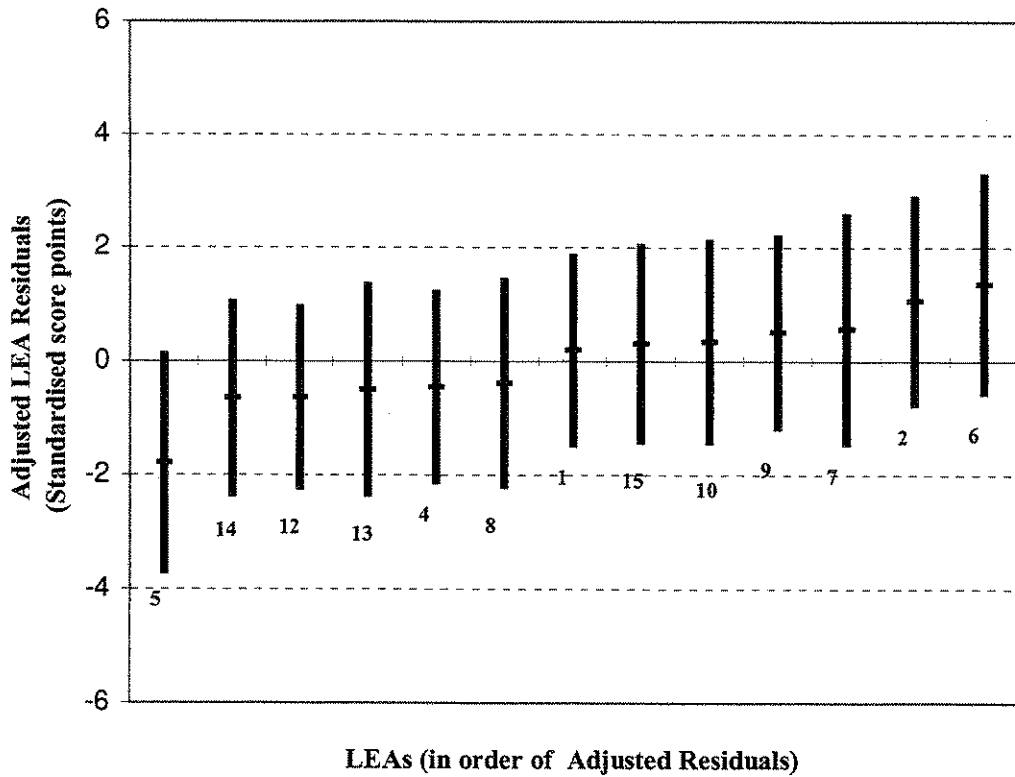


Figure 25: Adjusted LEA Residuals (Overall Score) for Cohort 2 Year 5, showing 95% confidence intervals



The above plots indicate how LEA results relate to the overall project, **in terms of overall performance averaged over both rounds of testing**, and controlling for a range of background factors. What is also of interest is the amount of progress made between rounds 1 and 2. This can be assessed for each LEA by means of a ‘random slopes’ multilevel model, in which it is assumed that the amount of progress between rounds of testing varies from school to school and from LEA to LEA. The estimated progress measures for the LEAs and their standard errors can be estimated, **in terms of the average change in standardised score from Round 1 to Round 2**, controlling for other factors. These progress measures are plotted in Figures 26 to 29, for all year groups combined and separately for Years 2, 3 and 5.

Figure 26: Adjusted LEA Progress Measures (Overall Score) for Cohort 2, All Year Groups, showing 95% confidence intervals

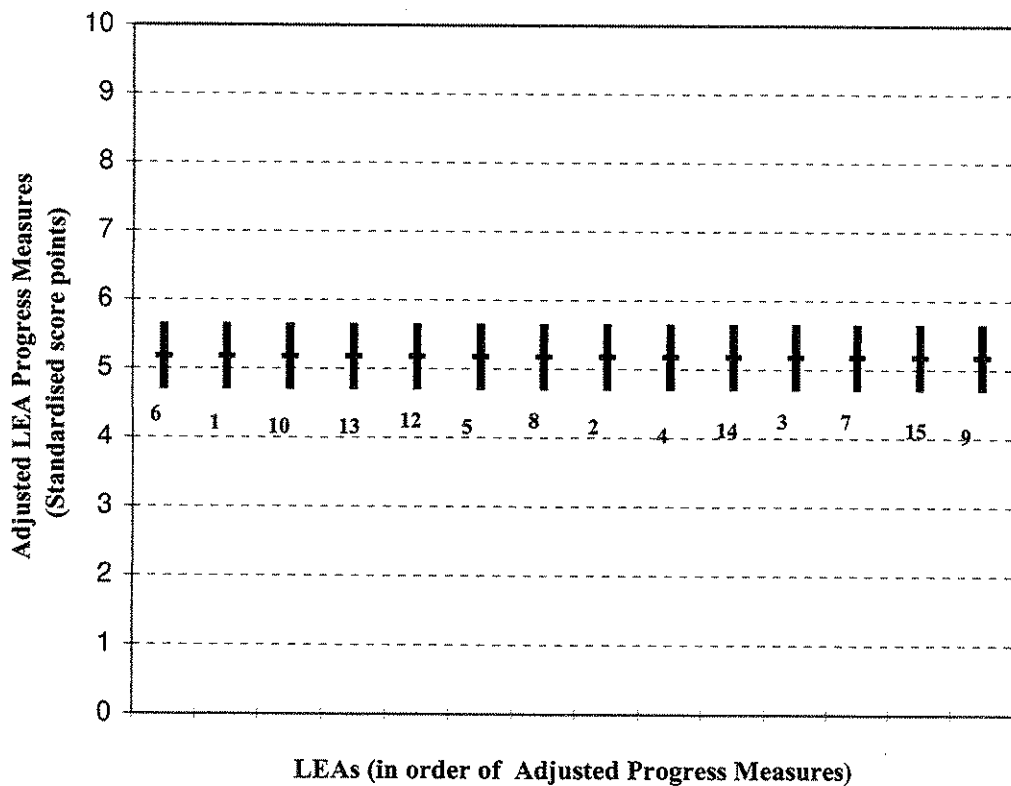


Figure 27: Adjusted LEA Progress Measures (Overall Score) for Cohort 2 Year 2, showing 95% confidence intervals

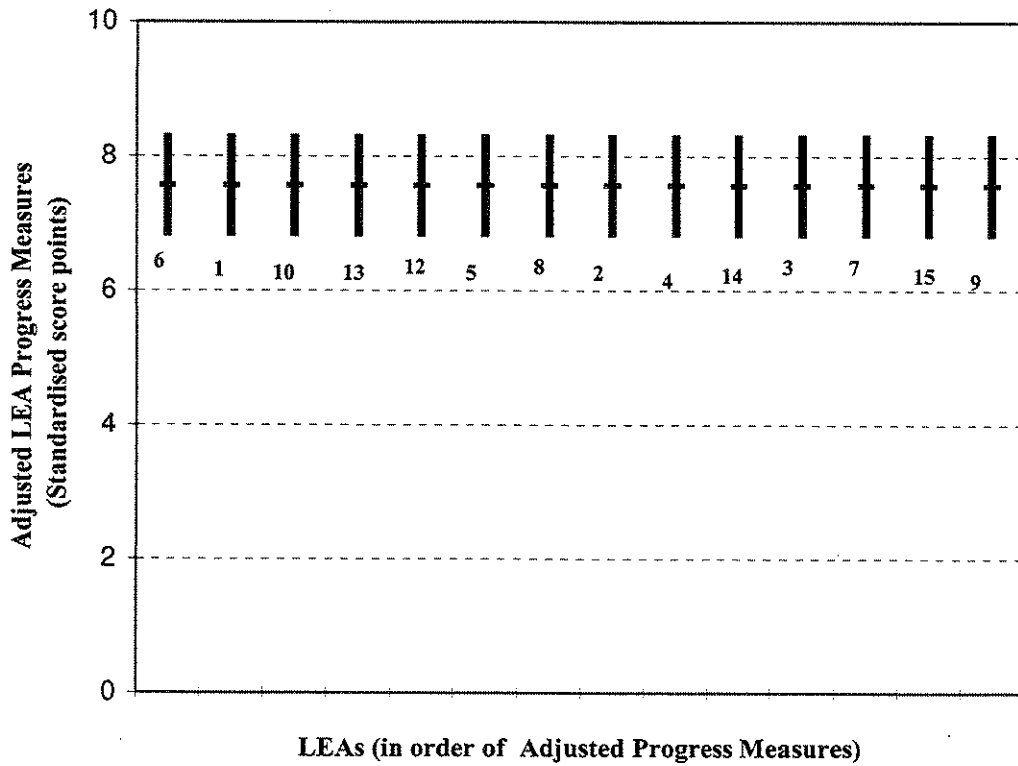


Figure 28: Adjusted LEA Progress Measures (Overall Score) for Cohort 2 Year 3, showing 95% confidence intervals

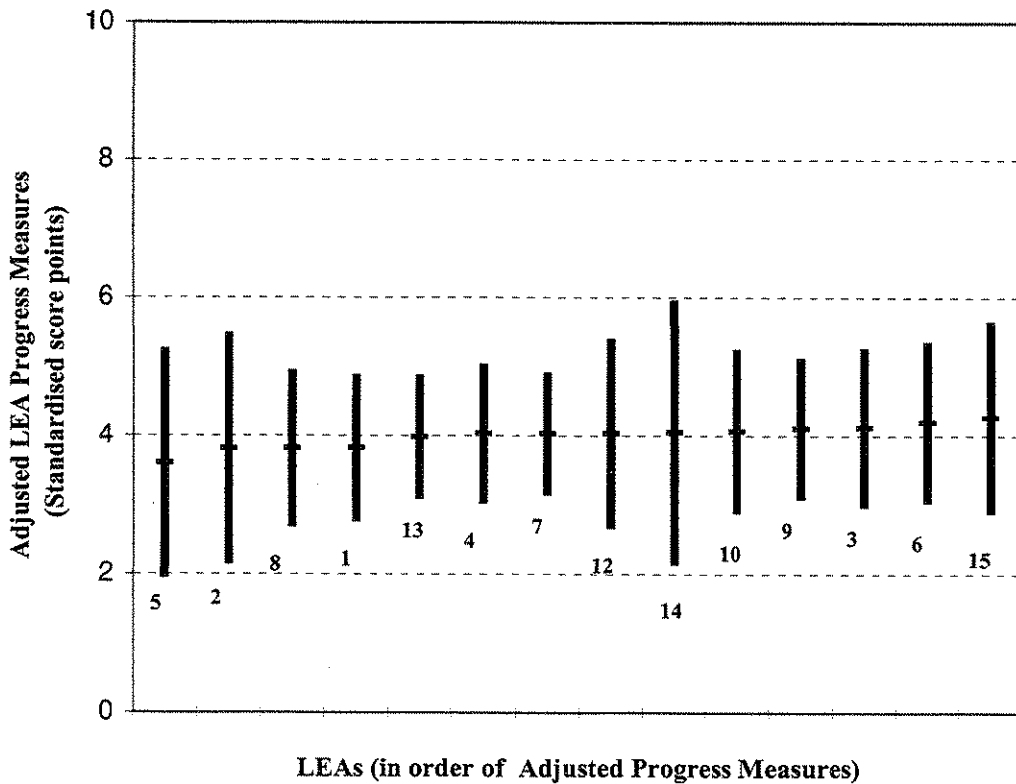


Table 14: Detailed Results of Multilevel Analysis of Overall Test Score for Year 2

Parameter	Estimate	Standard error	Sig.	95% Confidence interval	
				Min.	Max.
Base case					
LEA variance	3.5	2.064		-0.545	7.545
School variance	32.86	3.222	*	26.545	39.175
Pupil variance	115.9	2.188	*	111.612	120.188
Round variance	89.78	1.213	*	87.403	92.157
Final model					
LEA variance	4.475	2.3		-0.033	8.983
School variance	30.99	3.049	*	25.014	36.966
Pupil variance	120.2	2.011	*	116.258	124.142
Round variance	63.31	0.8564	*	61.631	64.989
Fixed coefficients					
CONS	70.75	1.896	*	67.034	74.466
ROUND	1.785	0.2251	*	1.344	2.226
SEN	-18.08	1.093	*	-20.222	-15.938
FSM	-5.084	0.2528	*	-5.579	-4.589
STAGE	2.224	0.1402	*	1.949	2.499
VOLUNT	1.877	0.9502	*	0.015	3.739
PFSM	-0.0377	0.02105		-0.079	0.004
CLASS	0.6565	0.04982	*	0.559	0.754
SEXINT	-0.5885	0.1062	*	-0.797	-0.380
OSCORINT	-0.06535	0.005268	*	-0.076	-0.055
VOLINT	-0.3952	0.3166		-1.016	0.225
HTINT1	0.04881	0.009297	*	0.031	0.067
HTINT4	0.03068	0.009389	*	0.012	0.049
CLASSINT	0.148	0.04959	*	0.051	0.245
INNPI	5.445	0.2578	*	4.940	5.950

Table 15: Detailed Results of Multilevel Analysis of Overall Test Score for Year 3

Parameter	Estimate	Standard error	Sig.	95% Confidence interval	
				Min.	Max.
Base case					
LEA variance	4.146	2.093	*	0.044	8.248
School variance	26.080	2.700	*	20.788	31.372
Pupil variance	155.600	2.419	*	150.859	160.341
Round variance	54.020	0.757	*	52.535	55.505
Final model					
LEA variance	0.000	0.000		0.000	0.000
School variance	39.750	3.575	*	32.743	46.757
Pupil variance	142.300	2.168	*	138.051	146.549
Round variance	44.190	0.620	*	42.975	45.405
Fixed coefficients					
CONS	53.520	1.670	*	50.247	56.793
ROUND	2.161	0.196	*	1.778	2.544
SEX	-0.615	0.117	*	-0.845	-0.386
NONUK	-2.561	1.004	*	-4.529	-0.593
SEN	-17.430	0.980	*	-19.350	-15.510
FSM	-4.543	0.264	*	-5.060	-4.026
STAGE	2.605	0.167	*	2.277	2.933
VOLUNT	1.891	1.036		-0.140	3.922
CLASS	1.157	0.050	*	1.059	1.255
CONTROL	2.548	0.918	*	0.750	4.346
SEXINT	-0.361	0.092	*	-0.542	-0.181
OSCORINT	-0.085	0.005	*	-0.095	-0.076
MAT1INT	-0.518	0.126	*	-0.765	-0.270
MAT2INT	0.916	0.160	*	0.603	1.229
HTINT1	0.025	0.009	*	0.008	0.042
HTINT2	-0.022	0.009	*	-0.039	-0.005
HTINT3	0.010	0.008		-0.005	0.025
HTINT4	-0.029	0.008	*	-0.045	-0.013
CLASSINT	0.051	0.043		-0.034	0.136
INNP1	1.574	0.224	*	1.135	2.013

Table 16: Detailed Results of Multilevel Analysis of Overall Test Score for Year 5

Parameter	Estimate	Standard error	Sig.	95% Confidence interval	
				Min.	Max.
Base case					
LEA variance	2.828	1.803		-0.706	6.362
School variance	28.56	2.967	*	22.745	34.375
Pupil variance	172.7	2.567	*	167.669	177.731
Round variance	42.68	0.6024	*	41.499	43.861
Final model					
LEA variance	2.374	1.873		-1.297	6.045
School variance	38.51	3.743	*	31.174	45.846
Pupil variance	147.1	2.19	*	142.808	151.392
Round variance	36.77	0.5189	*	35.753	37.787
Fixed coefficients					
CONS	57.78	1.793	*	54.266	61.294
ROUND	1.528	0.1847	*	1.166	1.890
SEX	-0.4911	0.1189	*	-0.724	-0.258
NONUK	-2.089	0.7827	*	-3.623	-0.555
SEN	-17.29	0.8365	*	-18.930	-15.650
FSM	-4.968	0.2726	*	-5.502	-4.434
STAGE	2.147	0.1833	*	1.788	2.506
PFSM	-0.07622	0.02223	*	-0.120	-0.033
CLASS	1.224	0.0407	*	1.144	1.304
CONTROL	2.135	1.018	*	0.140	4.130
OSCORINT	-0.06118	0.004745	*	-0.070	-0.052
MAT1INT	0.1675	0.115		-0.058	0.393
MAT2INT	-0.2385	0.1474		-0.527	0.050
VOLINT	0.8647	0.2477	*	0.379	1.350
HTINT1	0.03064	0.00822	*	0.015	0.047
HTINT3	0.008028	0.007328		-0.006	0.022
CLASSINT	0.2146	0.03597	*	0.144	0.285
INNPI	1.705	0.2115	*	1.290	2.120

Cohort 3 (Entry)

Summary

- The variables with apparently positive relationships with test score are stage of English fluency, various ethnic groups relative to the white population (Black African, Indian, Pakistani, Bangladeshi and Chinese), and percentage of pupils with first language not English. Background variables with apparently negative relationships with test scores include SEN level, eligibility for free school meals, Black Caribbean pupils relative to the white population, and percentage of pupils eligible for free school meals.
- Considering year groups separately, in general the same relationships as above were found, with some minor variations.

There was much more variation between pupils than between year groups, schools or LEAs. About 8% of the variation between pupils could be explained by pupil background variables, and about one-half of the variation between schools could be explained by a combination of pupil and school variables.

The Model for Cohort 3

The first round of data collection for Cohort 3 of the National Numeracy Project included background data, and baseline scores for pupils in Years 1, 2 and 4. The following types of data were collected:

- Raw and standardised scores on mathematics tests at entry (different tests for each Year);
- Pupil background data;
- School background data;
- School-level data on factors such as time devoted to mathematics etc.

Table 17 contains details of all the variables derived from the data collection exercise which were used in this phase of multilevel analysis. The aim of the analysis was to investigate factors at the school and pupil levels which might be associated with mathematics scores, and to see which were apparently statistically significant. It was not possible to carry out a 'value-added' analysis, since no prior attainment measures were available - this type of analysis will be carried out at a later stage.

Results of Multilevel Analysis

Tables 19 to 24 show some of the detailed results of the multilevel model fitting to various datasets: all years combined for each of three outcomes, and Years 1, 2 and 4 for overall score only. In technical language, these tables show the random variances at each level at each stage of model fitting, plus the coefficients of the background variables in the 'full model'. They also show whether or not variances or coefficients are statistically significant at the 5% level, as well as 95% confidence intervals for each parameter.

These tables, although they show the full results of all the modelling carried out at this stage, may not be easy to interpret for all readers. To help with this, therefore, the coefficients which express the estimated relationships between test scores and each of the background variables have been converted into 'effect sizes' which represent the 'strength' of each relationship as a percentage, and which allow the different variables to be compared in terms of their apparent influence on the test outcome, when all other variables are simultaneously taken into account.

Effect sizes are plotted in Figures 30 to 35, for the six different models described in Tables 19 to 24. For each variable, the estimated effect size is plotted as a diamond, with a vertical line indicating the 95% confidence interval for the estimate. Any variable whose line intersects the horizontal zero axis can be regarded as not statistically significant (at the 5% level). Positive values imply a positive relationship with the test score outcome; negative values imply that test score tend to decrease with higher values of the given background variable.

Figure 30: Effect Sizes from Multilevel Model fitted to Written Test Scores for All Year Groups

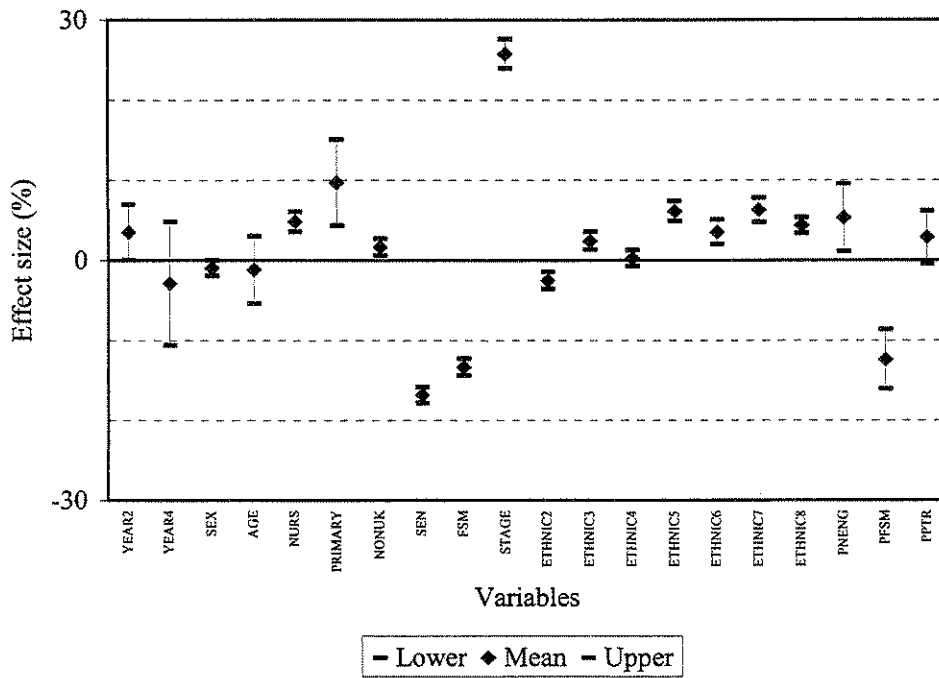


Figure 31: Effect Sizes from Multilevel Model fitted to Mental Test Scores for All Year Groups

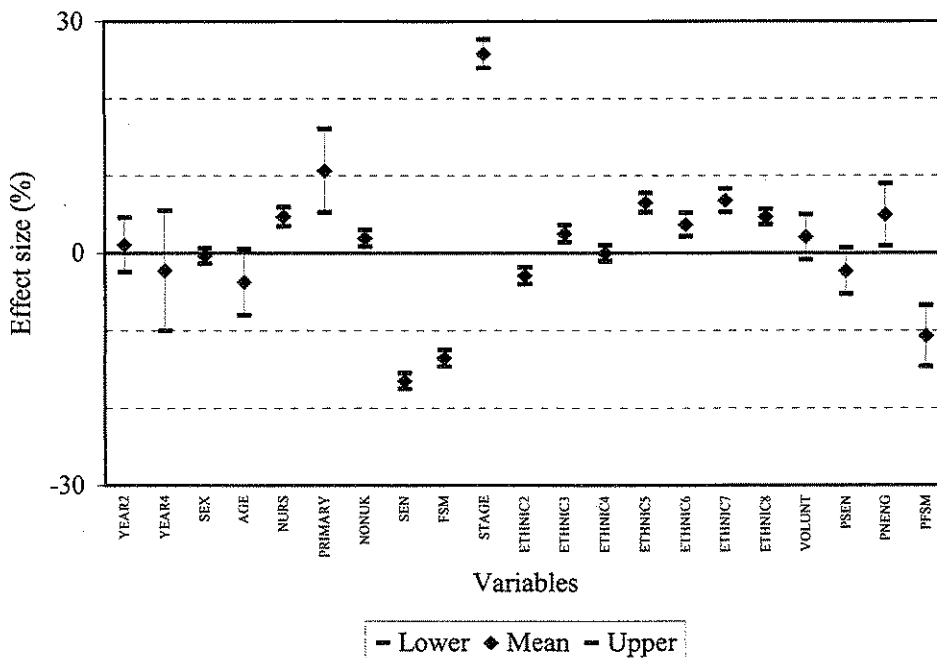
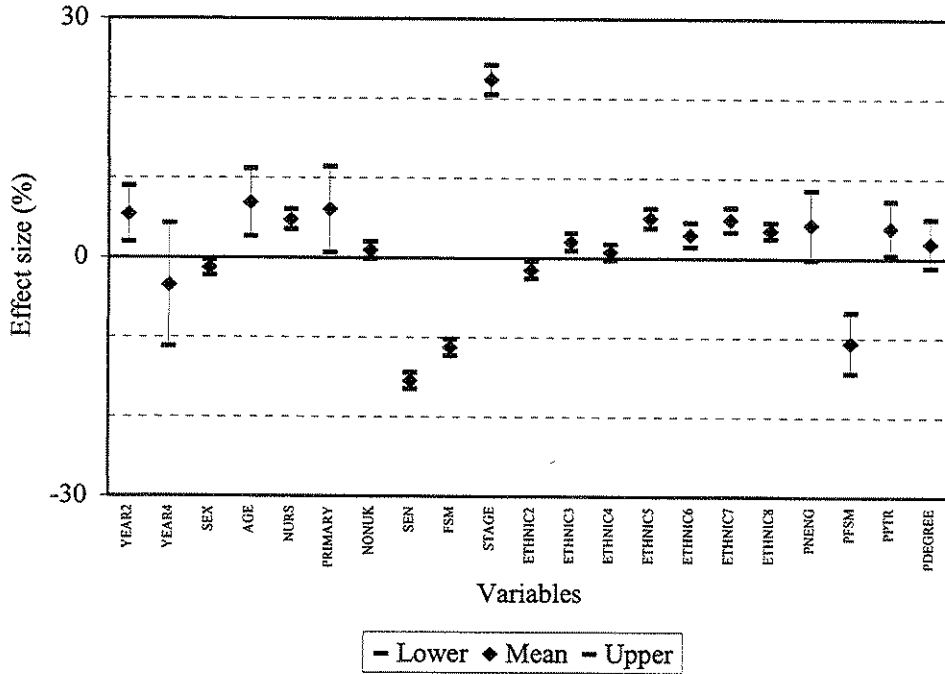


Figure 32: Effect Sizes from Multilevel Model fitted to Overall Test Scores for All Year Groups



In Figures 30 to 32, above, it is clear that the variables with apparently positive relationships with test score are stage of English fluency, various ethnic groups relative to the white population (Black African, Indian, Pakistani, Bangladeshi and Chinese), and percentage of pupils with first language not English. Background variables with apparently negative relationships with test scores include SEN level, eligibility for free school meals, Black Caribbean pupils relative to the white population, and percentage of pupils eligible for free school meals.

Some of the relationships displayed here will be intuitively reasonable, and others may be less so. Some may be artefacts, or produced through a relationship with a third factor not included in the model. The other three figures, for Years 1 to 4, will show some of the same patterns and some which are different.

Figure 33: Effect Sizes from Multilevel Model fitted to Overall Test Scores for Year 1

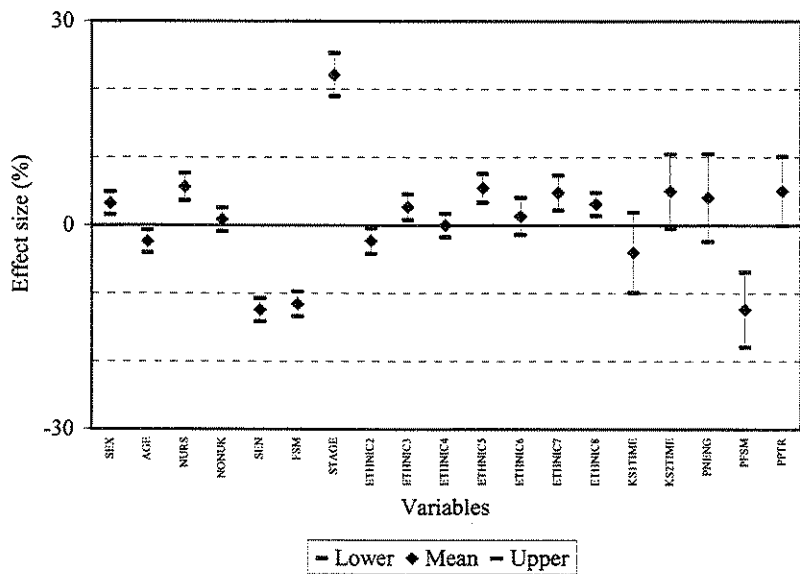


Figure 34: Effect Sizes from Multilevel Model fitted to Overall Test Scores for Year 2

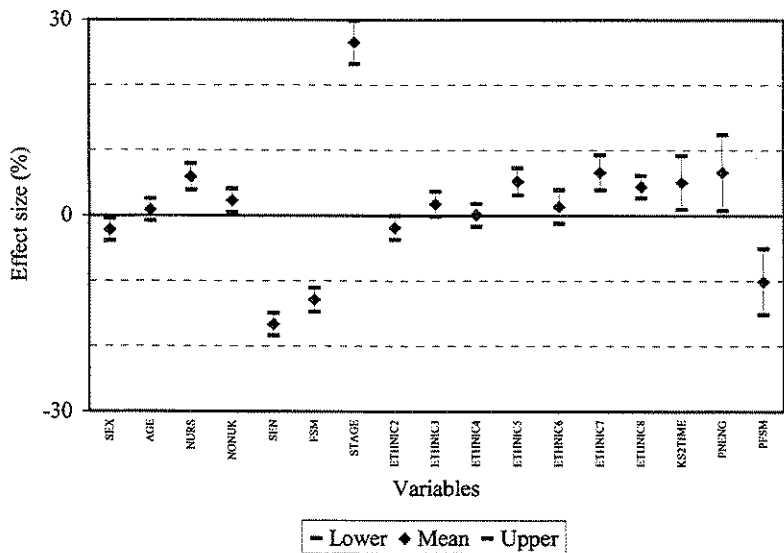
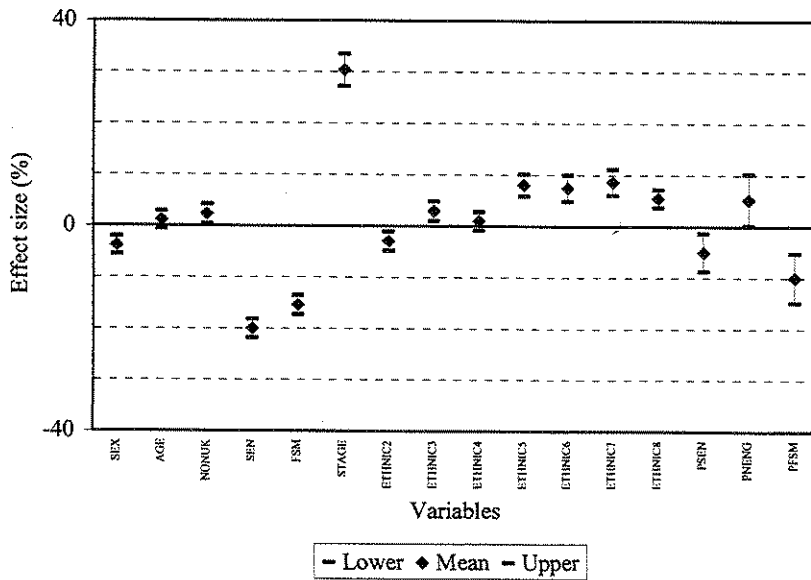


Figure 35: Effect Sizes from Multilevel Model fitted to Overall Test Scores for Year 4



In addition to the relationships between test scores and a host of background variables described above, the multilevel model provides other information. In particular, it estimates the amount of variation in test scores which can be attributed to different levels in the model. The unified model had four levels: LEA, school, cohort and pupil. The amount of variation at each level is measured by the 'variance' (basically the square of the standard deviation) at that level, and may change as extra background variables are fitted to the model. For example, some of the differences between schools in average test scores may be eliminated when we take into account school-level variables such as percentage eligible for free school meals.

Figure 36: Random Variances in Overall Test Score at Different Levels for All Year Groups

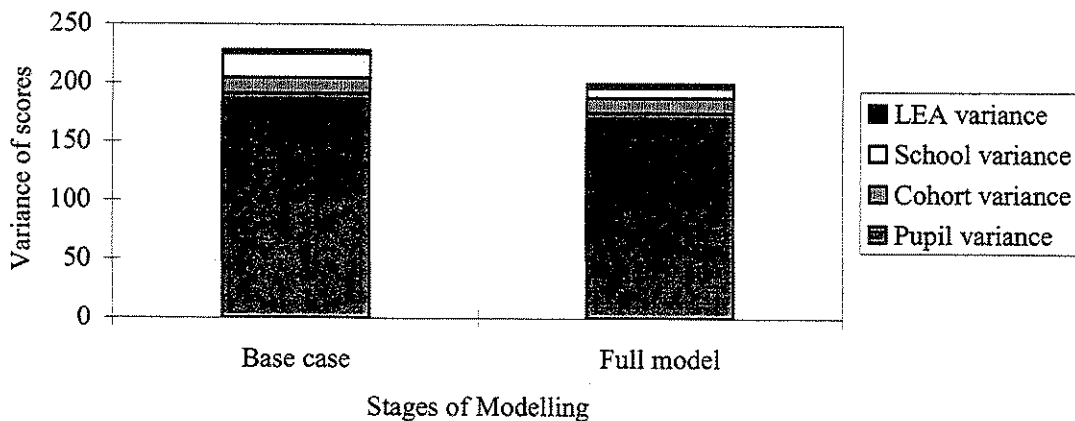


Figure 36 illustrates this effect, using the unified model fitted to all year groups. At each of the stages of modelling, the total variance is divided between the four levels in the model. For the base case, the total variance is close to the theoretical value of 225 for an age-standardised score with standard deviation 15.

It is clear from the above figure that in general the variance increases at lower levels: the greatest degree of variation is between pupils, and then between year groups, and then between schools, and lastly between LEA groups of schools. The introduction of pupil-level background variables reduces the pupil variance by about 8%, and pupil and school information together reduce school-level variance by about a half.

The model allows us to estimate for each school or LEA a 'residual', which is the amount by which its results differ from what might have been expected, given all the pupil and school background data. Figures 37 to 40 show the residuals for all the LEAs with schools in the project for overall test score, for all year groups combined and for Years 1, 2 and 4 separately. The plots indicate by a vertical line the 95% confidence interval for each LEA's residual value. Only those LEAs whose lines do not intersect the horizontal zero axis might be regarded as having results significantly different from expected.

Figure 37: Cohort 3 – Adjusted LEA Residuals (Overall Score) for All Year Groups, showing 95% confidence intervals

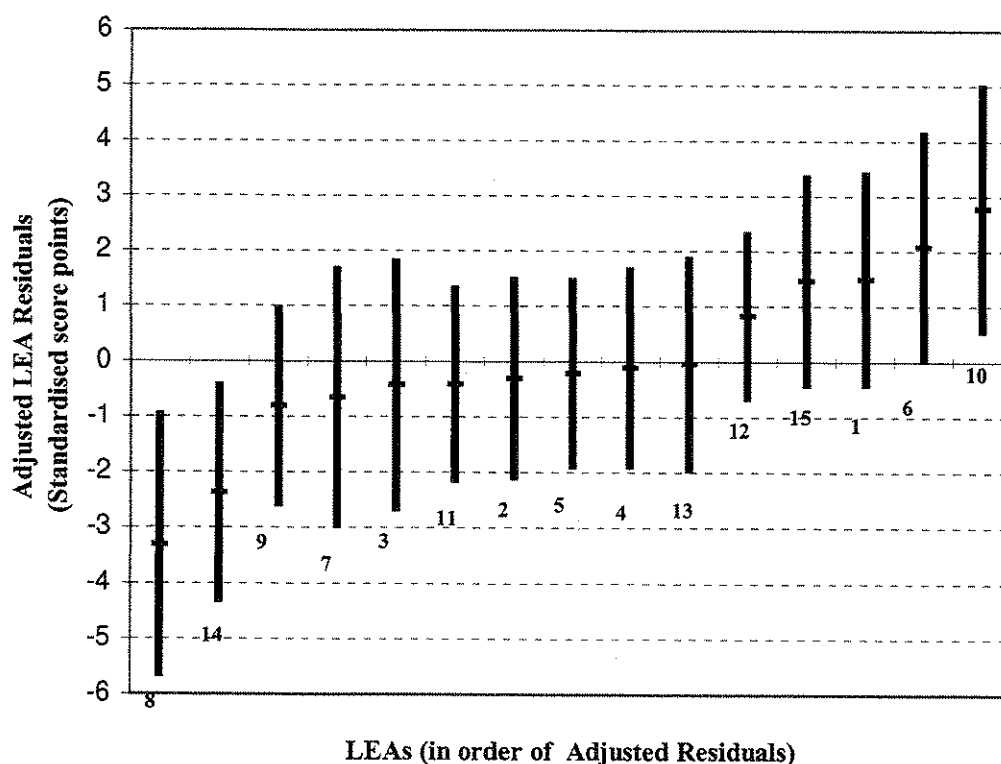


Figure 38: Cohort 3 – Adjusted LEA Residuals (Overall Score) for Year 1, showing 95% confidence intervals

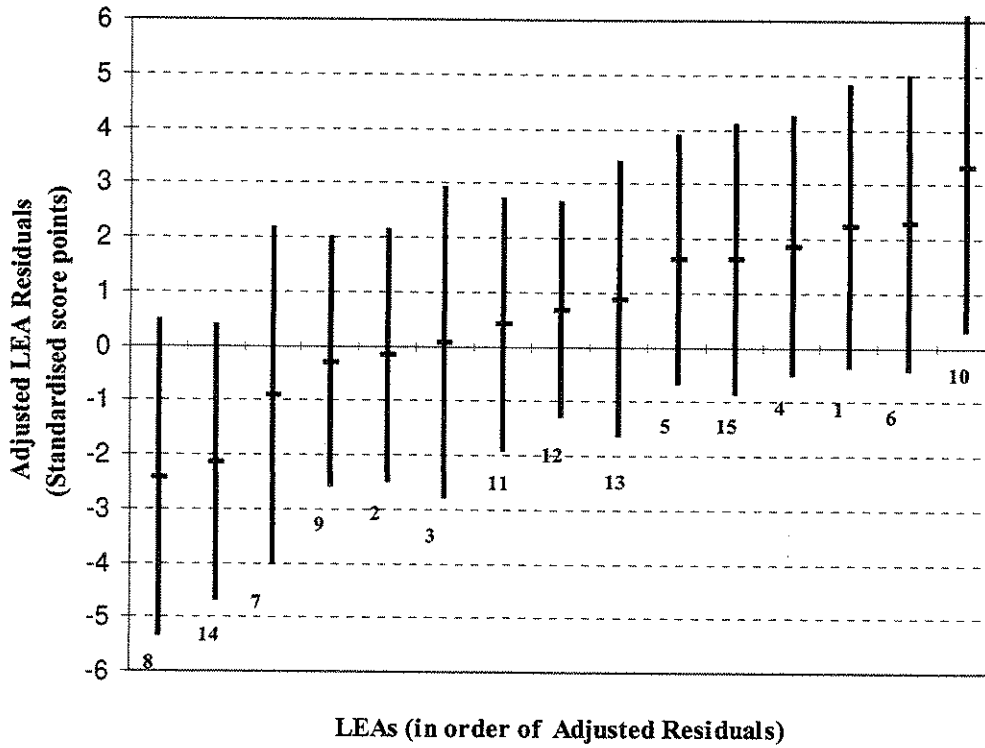


Figure 39: Cohort 3 – Adjusted LEA Residuals (Overall Score) for Year 2, showing 95% confidence intervals

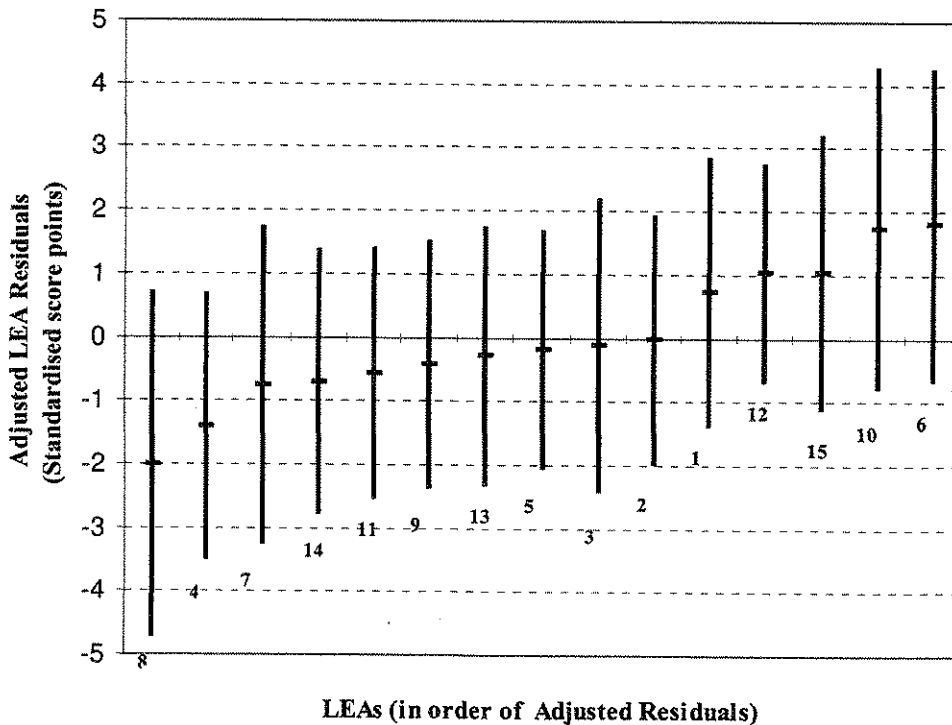


Figure 40: Cohort 3 – Adjusted LEA Residuals (Overall Score) for Year 4, showing 95% confidence intervals

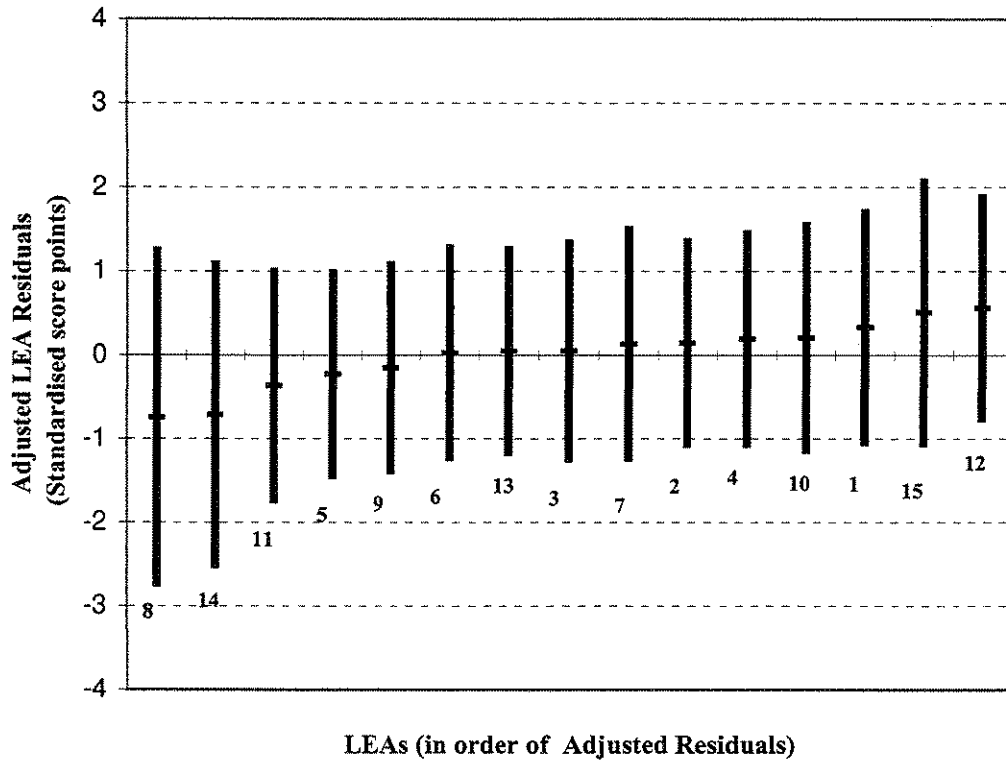


Table 17: Details of Variables Used in Multilevel Modelling

Name	Range		Description
	Min.	Max.	
LEA	204	888	LEA identifier
SCHOOL	3	316	School identifier
YEAR	1	4	Year Group
PUPILID	1001	6200	Pupil identifier
SWSCORE	69	131	Written Standardised score
SMSCORE	69	131	Mental Standardised score
SOSCORE	69	131	Overall Standardised score
VOLUNT	0	1	Voluntary school
KS1TIME	20	24	KS1- Hours/mins of lessons per week
KS2TIME	22	26	KS2- Hours/mins of lessons per week
KS1MTIME	3	6	KS1- Hours/mins of Maths lessons per week
KS2MTIME	3	6	KS2- Hours/mins of Maths lessons per week
PSEN	0	100	Percentage of SEN pupils
PNENG	0	100	Percentage of pupils with 1st lang. not English
PFSM	0	92	Percentage of pupils receiving Free school meals
PPTR	5	41	Pupil teacher ratio
PDEGREE	0	45	Percentage of teachers with Maths degree
PUNQUAL	0	53	Percentage of teachers unqualified
NOR	27	770	Number on roll
SEX	0	2	Sex (male = 0, female = 2)
AGE	69	117	Age in months
NURS	0	2	Received Nursery Education?
PRIMARY	0	14	Terms of primary education
NONUK	0	1	Received Non-UK Education?
SEN	0	1	Special Educational Needs
FSM	0	1	Receives Free School Meals?
STAGE	1	5	Stage of Learning English
ETHNIC2	0	1	Black Caribbean
ETHNIC3	0	1	Black African
ETHNIC4	0	1	Black Other
ETHNIC5	0	1	Indian
ETHNIC6	0	1	Pakistani
ETHNIC7	0	1	Bangladeshi
ETHNIC8	0	1	Chinese
CONS	1	1	Constant term
YEAR1	0	1	Year 1 indicator
YEAR2	0	1	Year 2 indicator
YEAR4	0	1	Year 4 indicator

Table 18: Numbers of LEAs, Schools and Pupils in Each Model

Model	LEAs	Schools	Pupils
All years (unified)	15	283	33,752
Year 1	15	254	11,521
Year 2	15	254	11,443
Year 4	15	250	10,788

Table 19: Detailed Results of Multilevel Analysis of Written Test Score for All Year groups

Parameter	Estimate	Standard error	Sig.	95% Confidence interval	
				Min.	Max.
Base case					
LEA variance	2.274	1.358		-0.388	4.936
School variance	17.760	2.232	*	13.385	22.135
Year variance	13.630	1.230	*	11.219	16.041
Pupil variance	194.200	1.553	*	191.156	197.244
Final model					
LEA variance	2.498	1.209	*	0.128	4.868
School variance	6.599	1.279	*	4.092	9.106
Year variance	13.860	1.219	*	11.471	16.249
Pupil variance	178.300	1.425	*	175.507	181.093
Fixed coefficients					
CONS	84.210	1.960	*	80.368	88.052
YEAR2	0.342	0.568		-0.772	1.456
YEAR4	-0.729	1.275		-3.228	1.770
SEX	-0.058	0.076		-0.206	0.090
AGE	-0.037	0.021		-0.079	0.005
NURS	1.043	0.143	*	0.763	1.323
PRIMARY	0.445	0.115	*	0.219	0.670
NONUK	2.388	0.679	*	1.058	3.718
SEN	-18.250	0.575	*	-19.377	-17.123
FSM	-4.364	0.175	*	-4.708	-4.020
STAGE	3.881	0.143	*	3.600	4.162
ETHNIC2	-2.112	0.402	*	-2.899	-1.325
ETHNIC3	2.218	0.508	*	1.223	3.213
ETHNIC4	-0.041	0.619		-1.255	1.172
ETHNIC5	4.540	0.440	*	3.678	5.402
ETHNIC6	2.069	0.442	*	1.202	2.936
ETHNIC7	5.086	0.585	*	3.939	6.233
ETHNIC8	10.710	1.178	*	8.401	13.019
VOLUNT	0.758	0.553		-0.325	1.841
PSEN	-0.036	0.024		-0.082	0.010
PNENG	0.025	0.011	*	0.005	0.046
PFSM	-0.093	0.018	*	-0.128	-0.059

Table 20: Detailed Results of Multilevel Analysis of Mental Test Score for All Year groups

Parameter	Estimate	Standard error	Sig.	95% Confidence interval	
				Min.	Max.
Base case					
LEA variance	4.280	2.251		-0.132	8.692
School variance	21.820	2.831	*	16.271	27.369
Year variance	19.320	1.661	*	16.064	22.576
Pupil variance	221.700	1.769	*	218.233	225.167
Final model					
LEA variance	3.049	1.542	*	0.027	6.071
School variance	11.400	1.794	*	7.884	14.916
Year variance	15.890	1.404	*	13.138	18.642
Pupil variance	207.100	1.652	*	203.862	210.338
Fixed coefficients					
CONS	71.110	2.935	*	65.357	76.863
YEAR2	1.862	0.610	*	0.666	3.058
YEAR4	-1.201	1.372		-3.890	1.488
SEX	-0.207	0.081	*	-0.366	-0.048
AGE	0.074	0.023	*	0.028	0.119
NURS	1.153	0.154	*	0.851	1.455
PRIMARY	0.272	0.124	*	0.029	0.514
NONUK	1.284	0.729		-0.144	2.712
SEN	-18.290	0.609	*	-19.483	-17.097
FSM	-3.920	0.189	*	-4.289	-3.551
STAGE	3.635	0.154	*	3.334	3.936
ETHNIC2	-1.188	0.432	*	-2.035	-0.341
ETHNIC3	1.948	0.545	*	0.880	3.016
ETHNIC4	0.938	0.666		-0.367	2.243
ETHNIC5	3.783	0.474	*	2.855	4.711
ETHNIC6	1.782	0.476	*	0.849	2.715
ETHNIC7	3.893	0.629	*	2.660	5.126
ETHNIC8	8.624	1.270	*	6.135	11.113
PNENG	0.023	0.012		-0.001	0.048
PFSM	-0.100	0.018	*	-0.136	-0.064
PPTR	0.186	0.084	*	0.020	0.351
PDEGREE	0.069	0.057		-0.042	0.181

Table 21: Detailed Results of Multilevel Analysis of Overall Test Score for All Year groups

Parameter	Estimate	Standard error	Sig.	95% Confidence interval	
				Min.	Max.
Base case					
LEA variance	3.109	1.720		-0.262	6.480
School variance	20.360	2.440	*	15.578	25.142
Year variance	13.470	1.221	*	11.077	15.863
Pupil variance	190.800	1.526	*	187.809	193.791
Final model					
LEA variance	3.078	1.463	*	0.211	5.945
School variance	8.655	1.413	*	5.886	11.424
Year variance	12.890	1.151	*	10.634	15.146
Pupil variance	175.000	1.399	*	172.258	177.742
Fixed coefficients					
CONS	79.380	2.667	*	74.153	84.607
YEAR2	1.112	0.558	*	0.018	2.206
YEAR4	-0.926	1.262		-3.399	1.548
SEX	-0.143	0.075		-0.290	0.003
AGE	-0.012	0.021		-0.053	0.030
NURS	1.080	0.142	*	0.802	1.358
PRIMARY	0.405	0.114	*	0.181	0.628
NONUK	2.051	0.672	*	0.734	3.368
SEN	-18.570	0.568	*	-19.683	-17.457
FSM	-4.283	0.174	*	-4.623	-3.943
STAGE	3.875	0.142	*	3.597	4.153
ETHNIC2	-1.824	0.398	*	-2.605	-1.043
ETHNIC3	2.179	0.503	*	1.193	3.165
ETHNIC4	0.299	0.613		-0.903	1.502
ETHNIC5	4.289	0.436	*	3.434	5.144
ETHNIC6	1.992	0.439	*	1.132	2.852
ETHNIC7	4.702	0.581	*	3.564	5.840
ETHNIC8	10.090	1.167	*	7.803	12.377
PNENG	0.028	0.011	*	0.006	0.049
PFSM	-0.108	0.016	*	-0.140	-0.075
PPTR	0.129	0.075		-0.019	0.276

Table 22: Detailed Results of Multilevel Analysis of Overall Test Score for Year 1

Parameter	Estimate	Standard error	Sig.	95% Confidence interval	
				Min.	Max.
Base case					
LEA variance	3.970	2.395		-0.724	8.664
School variance	35.790	3.733	*	28.473	43.107
Pupil variance	169.000	2.317	*	164.459	173.541
Final model					
LEA variance	4.026	1.994	*	0.118	7.934
School variance	24.860	2.685	*	19.597	30.123
Pupil variance	158.400	2.172	*	154.143	162.657
Fixed coefficients					
CONS	7.364	0.000		7.364	7.364
SEX	0.465	0.122	*	0.225	0.705
AGE	-0.097	0.035	*	-0.165	-0.029
NURS	1.066	0.194	*	0.685	1.447
NONUK	1.323	1.420		-1.460	4.106
SEN	-15.530	1.076	*	-17.639	-13.421
FSM	-3.586	0.285	*	-4.145	-3.027
STAGE	2.948	0.216	*	2.526	3.370
ETHNIC2	-1.738	0.701	*	-3.112	-0.364
ETHNIC3	2.250	0.805	*	0.671	3.829
ETHNIC4	-0.024	0.939		-1.865	1.817
ETHNIC5	3.680	0.726	*	2.256	5.104
ETHNIC6	0.702	0.726		-0.722	2.125
ETHNIC7	3.505	0.956	*	1.632	5.378
ETHNIC8	7.087	1.987	*	3.192	10.982
KS1TIME	-0.562	0.423		-1.391	0.267
KS2TIME	0.978	0.544		-0.089	2.045
PNENG	0.020	0.016		-0.012	0.051
PFSM	-0.103	0.023	*	-0.149	-0.057
PPTR	0.220	0.113		-0.001	0.442

Table 23: Detailed Results of Multilevel Analysis of Overall Test Score for Year 2

Parameter	Estimate	Standard error	Sig.	95% Confidence interval	
				Min.	Max.
Base case					
LEA variance	2.468	1.733		-0.929	5.865
School variance	30.770	3.335	*	24.233	37.307
Pupil variance	196.900	2.703	*	191.602	202.198
Final model					
LEA variance	2.071	1.402		-0.677	4.819
School variance	22.890	2.564	*	17.865	27.915
Pupil variance	180.500	2.478	*	175.643	185.357
Fixed coefficients					
CONS	56.360	11.010	*	34.780	77.940
SEX	-0.332	0.131	*	-0.588	-0.076
AGE	0.036	0.037		-0.036	0.109
NURS	1.152	0.203	*	0.755	1.549
NONUK	3.170	1.297	*	0.628	5.712
SEN	-19.240	1.012	*	-21.224	-17.256
FSM	-4.145	0.300	*	-4.734	-3.556
STAGE	3.996	0.253	*	3.499	4.493
ETHNIC2	-1.363	0.674	*	-2.683	-0.043
ETHNIC3	1.596	0.887		-0.142	3.334
ETHNIC4	0.063	1.103		-2.099	2.225
ETHNIC5	3.667	0.753	*	2.192	5.142
ETHNIC6	0.783	0.755		-0.697	2.263
ETHNIC7	4.823	1.010	*	2.843	6.803
ETHNIC8	9.957	1.999	*	6.039	13.875
KS2TIME	1.043	0.435	*	0.191	1.895
PNENG	0.034	0.015	*	0.004	0.063
PFSM	-0.088	0.022	*	-0.131	-0.044

Table 24: Detailed Results of Multilevel Analysis of Overall Test Score for Year 4

Parameter	Estimate	Standard error	Sig.	95% Confidence interval	
				Min.	Max.
Base case					
LEA variance	3.845	2.247		-0.559	8.249
School variance	29.350	3.274	*	22.933	35.767
Pupil variance	207.400	2.931	*	201.655	213.145
Final model					
LEA variance	0.506	0.654		-0.776	1.787
School variance	15.670	1.933	*	11.881	19.459
Pupil variance	184.600	2.608	*	179.488	189.712
Fixed coefficients					
CONS	76.750	4.539	*	67.854	85.646
SEX	-0.597	0.136	*	-0.863	-0.331
AGE	0.048	0.038		-0.028	0.123
NONUK	2.214	0.958	*	0.336	4.092
SEN	-19.470	0.896	*	-21.227	-17.713
FSM	-5.127	0.317	*	-5.748	-4.506
STAGE	5.232	0.279	*	4.686	5.778
ETHNIC2	-2.088	0.683	*	-3.427	-0.749
ETHNIC3	2.716	0.913	*	0.928	4.505
ETHNIC4	1.212	1.160		-1.062	3.486
ETHNIC5	5.703	0.778	*	4.178	7.228
ETHNIC6	4.470	0.782	*	2.937	6.003
ETHNIC7	6.706	1.012	*	4.722	8.690
ETHNIC8	12.740	2.073	*	8.677	16.803
PSEN	-0.078	0.029	*	-0.135	-0.021
PNENG	0.029	0.014	*	0.001	0.056
PFSM	-0.091	0.022	*	-0.134	-0.047

Section 2

Full Data Sets

Cohort 1 – Year 3

Contents:

Project Report 1	Standardised scores and progress measures by background data for Project
Project Report 2	Round 3 Standardised scores by LEA
Project Report 3	Progress scores (Round 1-3) by LEA
Project Report 4	Progress scores at each stage of testing by LEA
Item Facilities Report	Comparison of % of correct answers for Project with % from National Standardisation sample
Chart 1	Round 3 Overall Test Score distribution
Chart 2	Round 3 Written Test Score distribution
Chart 3	Round 3 Mental Test Score distribution
Chart 4	Mean scores for third round of testing
Chart 5	Mean scores for Boys and Girls
Chart 6	Mean scores by term of birth
Chart 7	Mean progress scores (Round 2 to Round 3)
Chart 8	Mean progress scores (Round 1 to Round 3)

Project Report 1 - National Numeracy Project - June 1998
Cohort 1 - Year 3 - Mean Standardised Test Scores
Summary by background data- ALL LEAs

	Written Round 3		Mental Round 3		Overall Round 3		Written Progress		Mental Progress		Overall Progress		No. of pupils absent	Total no. of pupils	Percent of pupils	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.				
Total	101.6	15.9	102.0	15.9	102.1	15.8	5.7	10.8	6.6	13.4	6.6	10.3	481	7687	100%	
Gender	Boys	102.0	16.2	102.5	16.2	102.6	16.1	6.3	10.9	7.1	13.6	7.2	10.3	251	3933	51%
	Girls	101.1	15.5	101.5	15.4	101.6	15.4	5.0	10.8	6.0	13.1	6.0	10.2	227	3751	49%
	Not known												3	3	0%	
Ethnic group	White	102.8	16.0	103.1	15.9	103.4	15.9	5.6	10.7	6.4	13.4	6.5	10.3	303	5424	71%
	Black Caribbean	97.5	14.0	99.4	14.9	98.5	14.2	4.5	11.5	3.6	14.1	4.9	11.3	14	288	4%
	Black African	99.5	14.9	101.2	16.1	100.5	15.4	4.2	13.0	6.0	13.4	5.3	11.2	6	165	2%
	Black Other	99.4	15.9	101.9	16.3	100.5	15.6	3.3	11.6	9.9	15.5	6.1	9.9	9	73	1%
	Indian	102.6	13.9	102.9	14.6	103.1	14.1	6.2	9.6	8.3	12.4	7.7	9.1	11	294	4%
	Pakistani	96.6	14.7	97.8	15.2	97.3	14.9	6.2	10.4	8.2	12.7	7.8	9.9	23	573	7%
	Bangladeshi	95.6	15.4	95.5	15.3	95.7	15.0	6.4	11.2	7.1	13.0	7.4	9.8	82	488	6%
Receives Free School Meals?	Other	101.5	15.5	101.7	15.6	102.0	15.3	6.0	12.3	6.7	14.4	6.9	11.3	19	355	5%
	Not known	98.8	11.3	97.6	13.8	98.9	12.2	13.0	8.5	13.0	14.1	14.5	10.6	14	27	0%
	Yes	96.9	15.2	97.6	15.5	97.4	15.1	5.1	11.2	5.8	13.6	6.1	10.6	217	2882	37%
	No	104.7	15.6	105.0	15.4	105.3	15.5	6.0	10.6	7.0	13.2	7.0	10.2	220	4213	55%
	Not known	101.3	15.4	101.7	15.8	101.8	15.4	5.8	10.4	6.8	13.5	6.8	9.6	44	592	8%
	None	105.8	14.5	105.9	14.4	106.4	14.3	5.9	10.9	7.4	13.4	7.0	10.4	335	5558	72%
	Stage 1	92.9	12.7	93.9	13.3	93.3	12.6	5.3	10.9	4.3	13.3	5.6	10.3	35	759	10%
Special Educational Needs level	Stage 2	89.2	13.1	90.7	14.1	89.7	13.2	5.2	10.4	4.2	12.7	5.7	9.8	53	744	10%
	Stage 3	84.4	12.7	86.8	14.5	85.0	13.1	3.0	9.9	3.1	11.8	3.8	9.0	21	257	3%
	Stage 4 or above	80.9	12.7	80.5	13.0	80.6	12.6	3.5	10.4	5	12.8	3.1	10.0	16	140	2%
	Not known	98.8	15.1	100.5	16.6	99.8	15.6	6.9	10.6	8.1	12.9	8.2	9.8	21	229	3%
	New to English	84.2	12.4	84.8	14.4	84.2	12.6	5.3	7.3	4.8	12.1	6.2	7.8	6	108	1%
	Becoming familiar with English	94.3	14.4	94.3	14.7	94.4	14.2	7.5	10.8	6.4	13.0	8.0	9.9	54	536	7%
	Becoming confident with English	98.8	14.0	99.6	14.1	99.4	14.0	5.3	11.4	6.6	12.2	6.4	10.1	44	572	7%
Stage of Learning English	Very fluent in most contexts	103.2	14.9	104.1	15.1	104.0	14.8	5.1	11.0	7.9	14.4	6.5	10.3	25	482	6%
	English first language	102.7	15.9	103.1	15.7	103.3	15.8	5.6	10.8	6.4	13.4	6.5	10.4	332	5725	74%
	Not known	100.7	15.7	102.6	17.1	101.8	16.1	7.4	10.1	9.1	13.1	8.8	9.6	20	264	3%

* Number of pupils absent from overall testing

Project Report 1 - National Numeracy Project - June 1998
Cohort 1 - Year 3 - Mean Standardised Test Scores
Summary by background data- ALL LEAs

	Written Round 3		Mental Round 3		Overall Round 3		Written Progress		Mental Progress		Overall Progress		No. of pupils absent	Total no. of pupils	Percent of pupils
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.			
4 terms or less	94.6	15.8	95.8	15.7	95.2	15.6	4.9	10.3	2.4	20.1	4.4	11.8	15	348	5%
5	96.3	14.0	97.0	15.6	96.8	14.4	4.4	11.3	6.3	11.4	5.0	8.5	6	74	1%
6	101.8	15.3	100.6	16.4	101.7	15.3	4.8	9.5	5.1	12.0	5.7	8.6	7	94	1%
7	97.3	14.5	96.2	14.6	97.0	14.0	6.0	10.6	6.2	13.9	6.9	10.4	3	46	1%
8	96.3	15.3	97.2	15.4	96.9	15.4	4.8	9.9	6.4	12.3	6.3	9.3	13	258	3%
9	98.6	15.0	99.7	15.1	99.3	14.9	4.7	10.5	5.2	13.6	5.6	10.3	40	572	7%
10	100.6	15.6	101.3	15.9	101.2	15.6	4.4	11.4	4.8	13.9	5.1	10.9	102	1379	18%
11	104.2	15.7	104.3	15.5	104.7	15.6	6.4	10.7	7.1	13.2	7.3	10.2	231	3895	51%
12	102.6	17.6	103.3	16.8	103.3	17.1	8.7	12.1	10.3	15.9	10.2	12.2	10	140	2%
Not known	98.3	15.2	99.3	16.1	99.0	15.4	4.8	10.4	7.8	12.7	6.6	9.1	54	881	11%
1	89.0	11.1	90.2	12.2	89.3	11.0	5.2	10.7	4.3	13.2	5.7	10.1	118	1467	19%
2	105.2	12.8	105.5	12.8	105.9	12.4	6.5	11.0	7.9	13.5	7.7	10.4	218	3588	47%
3	120.0	9.9	119.6	10.0	120.9	9.5	5.2	9.8	6.0	12.4	5.8	9.5	31	729	9%
Not Known	96.9	16.6	97.6	17.0	97.4	16.7	4.0	10.9	5.8	13.6	5.3	10.4	114	1903	25%
1	87.1	10.2	88.7	11.7	87.5	10.3	4.9	10.1	4.0	12.8	5.4	9.6	82	1180	15%
2	107.2	13.0	105.7	15.3	107.2	13.1	11.7	10.7	10.6	15.3	12.4	10.1	9	177	2%
2A	110.8	11.3	110.2	11.3	111.3	10.8	6.1	11.5	7.7	13.5	7.3	10.8	59	1214	16%
2B	103.8	11.5	104.4	11.5	104.5	11.1	6.6	11.3	8.4	13.5	7.9	10.8	79	1154	15%
2C	96.8	11.2	98.0	12.3	97.4	11.1	6.2	10.8	7.7	13.8	7.5	10.3	98	1293	17%
3	119.8	10.2	118.8	10.5	120.5	9.8	5.7	9.7	6.4	12.4	6.3	9.5	37	953	12%
Not Known	95.9	16.1	96.8	16.7	96.4	16.2	3.4	10.9	4.3	13.1	4.2	10.0	117	1716	22%

* Number of pupils absent from overall testing

Project Report 2 - National Numeracy Project - June 1998
Cohort 1 - Round 3 - Mean Standardised Test Scores
Summary by LEA

Year Group: 3

		Written		Mental		Overall		No. of pupils absent	Total no. of pupils
		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.		
Total		101.6	15.9	102.0	15.9	102.1	15.8	481	7687
LEA	1	100.0	15.5	101.7	15.6	101.0	15.5	14	468
	2	106.8	15.6	106.0	15.0	107.1	15.4	29	710
	3	102.3	15.0	102.8	15.7	102.9	15.3	17	393
	4	99.4	15.0	101.1	15.9	100.4	15.1	33	674
	5	101.3	15.1	101.2	15.5	101.6	15.1	32	826
	6	98.3	15.6	99.7	16.2	99.1	15.6	19	531
	7	100.2	14.7	98.2	16.6	99.8	15.1	10	227
	8	102.8	16.2	103.9	15.6	103.7	16.0	21	577
	9	104.3	16.5	104.5	15.3	104.9	15.9	31	624
	10	99.9	16.0	99.4	16.1	100.0	15.9	137	571
	12	100.1	15.8	100.5	15.7	100.5	15.8	34	862
	14	102.3	16.9	102.2	16.5	102.7	16.8	21	587
15	101.0	15.9	102.4	15.7	101.9	15.8	83	637	

Project Report 3 - National Numeracy Project - June 1998
Cohort 1 - Round 3 - Mean Progress Standardised Test Scores
Summary by LEA

Year Group: 3

	Written Progress Score: Round3 - Round2		Mental Progress Score: Round3 - Round2		Overall Progress Score: Round3 - Round2		Written Progress Score: Round3 - Round1		Mental Progress Score: Round3 - Round1		Overall Progress Score: Round3 - Round1		No. of pupils absent	Total no. of pupils
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.		
Total	2.0	11.2	1.9	12.8	1.6	10.1	5.7	10.8	6.6	13.4	6.6	10.3	1776	7687
1	.8	10.7	2.4	13.3	1.0	9.6	4.7	10.8	4.3	12.9	5.1	9.9	100	468
2	3.8	10.9	.8	11.0	2.4	9.2	8.5	10.4	8.4	13.2	9.1	10.2	110	710
3	1.5	9.4	2.4	12.5	1.5	9.4	5.1	9.0	5.8	11.0	5.9	8.3	90	393
4	.1	9.9	.8	12.5	.0	9.1	2.5	10.6	5.0	14.1	3.9	10.3	132	674
5	2.1	11.7	1.9	12.2	1.7	10.3	5.2	10.1	5.0	12.9	5.7	9.5	193	826
6	-2.4	12.2	.5	12.9	-1.8	10.4	1.9	12.5	3.8	14.4	3.0	11.1	130	531
7	4.9	9.8	2.7	13.5	4.0	9.2	8.7	9.5	7.0	12.1	8.8	9.3	48	227
8	3.3	10.1	2.2	13.2	2.6	9.5	6.2	10.3	7.7	12.2	7.5	9.6	108	577
9	6.5	11.9	5.1	13.5	5.8	10.8	7.4	11.2	8.0	13.7	8.3	10.6	128	624
10	1.7	12.3	3.9	14.1	2.2	11.2	8.8	10.8	8.5	14.6	9.3	10.5	245	571
12	1.7	11.7	2.7	12.5	1.7	10.6	5.6	10.7	8.8	13.5	7.6	10.2	220	862
14	2.5	10.0	1.6	11.5	1.8	9.2	7.3	10.0	7.8	12.2	8.3	9.7	120	587
15	-1	11.2	-1.8	13.4	-1.2	10.6	3.6	11.3	4.8	14.3	4.6	11.3	152	637
LEA														

Project Report 4 - National Numeracy Project - June 1998
Cohort 1 - Round 3 - Mean Progress Standardised Test Scores
Summary by LEA

Year Group: 3

	Written Rounds (2-1)		Mental Rounds (2-1)		Overall Rounds (2-1)		Written Rounds (3-2)		Mental Rounds (3-2)		Overall Rounds (3-2)		Written Rounds (3-1)		Mental Rounds (3-1)		Overall Rounds (3-1)		No. of pupils absent	Total no. of pupils
	Mean		Mean		Mean		Mean		Mean		Mean		Mean		Mean		Mean			
Total	3.8		4.9		5.2		2.0		1.9		1.6		5.7		6.6		6.6		1776	7687
1	3.9		1.9		4.0		.8		2.4		1.0		4.7		4.3		5.1		100	468
2	4.7		7.5		6.8		3.8		.8		2.4		8.5		8.4		9.1		110	710
3	3.7		3.4		4.5		1.5		2.4		1.5		5.1		5.8		5.9		90	393
4	2.5		4.2		4.0		.1		.8		.0		2.5		5.0		3.9		132	674
5	3.4		3.3		4.3		2.1		1.9		1.7		5.2		5.0		5.7		193	826
6	4.6		3.5		5.0		-2.4		.5		-1.8		1.9		3.8		3.0		130	531
7	3.9		3.8		4.8		4.9		2.7		4.0		8.7		7.0		8.8		48	227
8	3.0		5.6		4.9		3.3		2.2		2.6		6.2		7.7		7.5		108	577
9	1.4		3.8		3.1		6.5		5.1		5.8		7.4		8.0		8.3		128	624
10	6.5		4.1		6.6		1.7		3.9		2.2		8.8		8.5		9.3		245	571
12	4.2		6.5		6.2		1.7		2.7		1.7		5.6		8.8		7.6		220	862
14	5.3		6.6		6.9		2.5		1.6		1.8		7.3		7.8		8.3		120	587
15	3.2		6.4		5.4		-.1		-1.8		-1.2		3.6		4.8		4.6		152	637
LEA																				

National Numeracy Project - June 1998

Year : 3

Cohort: 1

Item Facilities Report							Project - National Difference	
Item No.	Written Test	Mathematical content			Project	National		
22	Round three-digit number to nearest 100	Write 357 to nearest 100	G		52%	33%	19%	
16	Doubling	Double 60	M		53%	44%	10%	
8	Subtract 10 from a two digit number	10 less than 78	S		62%	53%	9%	
28	Find the difference between a positive and a negative number in	Find difference between 5° and -4°	S	E	19%	11%	8%	
14	Fraction recognition (one quarter)	Recognise a shaded quarter of a circle	F		49%	41%	8%	
36	Approximate the addition of three-digit numbers	Round each part of 897 + 406 to nearest 100	G		20%	13%	7%	
27	Read temperature from scale	Read 13 °C on scale - 30° to 40° degrees, numbered every 10°	R		46%	39%	7%	
18		_ - 10 = 46	S	B	57%	50%	6%	
42	Find the perimeter of a rectangle	Perimeter of 72m x 100m rectangle, all sides marked	I		13%	7%	6%	
26	Multiply two-digit number by 2, not crossing tens	71 x 2 = _	M	X	26%	21%	6%	
38	Fraction recognition (three tenths)	Recognise three tenths of a 2x5 rectangle	F		13%	7%	6%	
31	Numbers divisible by 5 with no remainder	Ring two multiples of 5: 8 36 15 53 11 40	N		36%	31%	5%	
21	Read weight from scale	Read 400g on scale 0 to 3kg, numbered every 500g	R		30%	24%	5%	
19	Divide two-digit number by 4	48 ÷ 4 = _	D		32%	27%	5%	
32	Divide a two-digit number by 5	85 ÷ 5 = _	D		19%	14%	5%	
24		43 - _ = 37	S	B	48%	44%	4%	
15	Add two digit numbers, crossing tens	27 + 36 = _	A		59%	55%	4%	
44	Subtract decimals with one decimal place	4.6 - 0.9 = _	S	F	9%	6%	4%	
34	Add fractions	½ + ¼ = _	F		15%	11%	4%	
35	Add three-digit numbers, crossing 10s and 100s	284 + 178 = _	A		23%	20%	4%	
25	Convert metres to centimetres	How many centimetres in 4 metres ?	M	L	36%	33%	3%	
5		18 - _ = 13	S	B	73%	70%	3%	
30	2 step word problem involving x and +	3 Oranges @ 11p and 1 pineapple @ 95p	M	A	£	23%	20%	3%
40	Divide three-digit number by 25, in a word problem	25 books in pack. Need 450 books. How many packs?	D	E		8%	6%	3%
37	Divide two-digit number by 3, with remainder	67 ÷ 3 = _	D			7%	5%	3%
29	Order numbers with one or two decimal places	Order 3.71 3.17 31.7 7.13 37.1	P			37%	35%	2%
6	Read time to half hour on a digital clock, add 1 hour	Read 10:30 on a digital clock. What time 1 hour later ?	A	T		60%	57%	2%
41	Subtract a four digit number from 3000	3000 - 1997 = _	S			5%	3%	2%



National Numeracy Project - June 1998
Year : 3 Cohort: 1

Item Facilities Report							Project - National Difference
Item No.	Written Test	Mathematical content			Project	National	
43	Divide a two-digit number by 4, with remainder	$93 \div 4 = _$	D		4%	3%	1%
33	Subtract length, crossing tens, in a word problem	Ribbon 94 cm. Cut off 39 cm. How many cm left?	S	L	15%	14%	1%
2	Add ten to teens number	$19+10= _$	A	X	88%	87%	1%
17	'15 percent of	Ring even numbers in range 5 to 21	N		64%	63%	1%
45	Volume of cuboid by counting cubes	Number of cm cubes in 2cm x 3cm x 4cm cuboid	V		8%	8%	0%
11	Add three single digits	$3 + 4 / 8 = _$	A		86%	85%	0%
23	Multiply teens number by 3, not crossing tens	$13 \times 3 = _$	M	X	47%	46%	0%
7	Find two numbers that add to....	$_ + _ = 28$	A	O	83%	83%	0%
39	Subtract three-digit numbers, crossing 10s and 100s	$354 - 159 = _$	S		8%	8%	0%
13	Divide money, in a word problem	5 biscuits cost 25p. How much is one biscuit ?	D	E	72%	72%	0%
1	Count to 7	Count 7 bags of crisps	A		98%	99%	0%
3	Recognise and find the total of 5p,2p and 1p coins	$5p+2p+1p+1p$ How much altogether?	A	£	92%	92%	0%
12	Order five numbers less than 100	Order 73, 47, 6, 12, 55	P		90%	90%	0%
10	Subtract single digit from teens number, in word problem	12 Birds. 5 fly away. How many left ?	S	E	88%	88%	-1%
20	Multiply a single digit by itself(square number)	$6 \times 6 = _$	M	N	45%	47%	-2%
9	Read a bar chart,scale marked in ones	Read off the bar - 6 children	R	H	84%	87%	-2%
4	Subtract single digits,in a word problem	E. has 4 apples. J. has 7.How many more has J ?	S	E	72%	79%	-6%

National Numeracy Project - June 1998

Year : 3

Cohort: 1

Item Facilities Report							Project - National Difference
Item No.	Mental Test	Mathematical content			Project	National	
12	'Write in figures' three digit number	Write in figures 506	P		71%	58%	13%
17	'Subtract' 30 from a two digit number	56 subtract 30	S		36%	26%	10%
14	'Write to the nearest hundred	Write 254 to nearest 100	G		39%	30%	10%
7	'Sum of two single digits, crossing ten	Sum of nine and eight	A		60%	52%	8%
15	'Difference between' 10 and a two digit number;	Difference between 73 and 10 ?	S		31%	23%	8%
11	'Half of' two digit number	One half of 28	D		45%	39%	7%
21	'Add' two two digit numbers, crossing tens	28 add 43	A		25%	18%	6%
13	'Take away a number from....it leaves....what is the number ?	Take away a number from 81.It leaves 72.What's the number ?	S	B	38%	32%	6%
16	'Multiply by' with single digits	Multiply six by four	M		25%	20%	6%
10	'Add' single digit to two digit number, crossing tens	Add 6 to 89	A		58%	53%	6%
3	'Share' between two	Share 10 sweets equally between two	D	E	79%	74%	5%
2	Addition of money,in a word problem	T. has 36p. R. gives her 10p. How much now ?	A	£	78%	75%	4%
19	'...is more than....' How many more ?	45 is more than 7. How many more ?	S		13%	9%	3%
22	Division of length,in a word problem, no remainder	String is 84cm. Cut in 4.Length of each piece ?	D	L	13%	10%	3%
9	'Share' among 6	60p shared among 6 children. How much each ?	D	£	63%	60%	3%
5	'Plus' with single digits	Four plus six	A		75%	73%	2%
18	'Remainder' when dividing by £	Remainder when 27 is divided by £	D		9%	7%	2%
4	'Take away' single digit from a teens number	Twelve take away four	S		77%	75%	2%
1	'Add' three single digit numbers	Five add three add two	A		88%	87%	2%
23	'Divide by' 100, no remainder	Divide 700 by 100	D		14%	13%	1%
6	'Times' by 10	Eight times ten	M		71%	70%	1%
24	'What number multiplied by itself makes....?'	What number multiplied by itself makes 36 ?	N		12%	12%	1%
8	Multiplication in a word problem, single digits	3 dominoes. Each has 5 dots. Dots altogether ?	M	E	79%	78%	0%
20	'Multiplied by' with single digit numbers	Seven multiplied by nine	M		9%	10%	0%

National Numeracy Project - June 1998

Year : 3

Cohort : 1

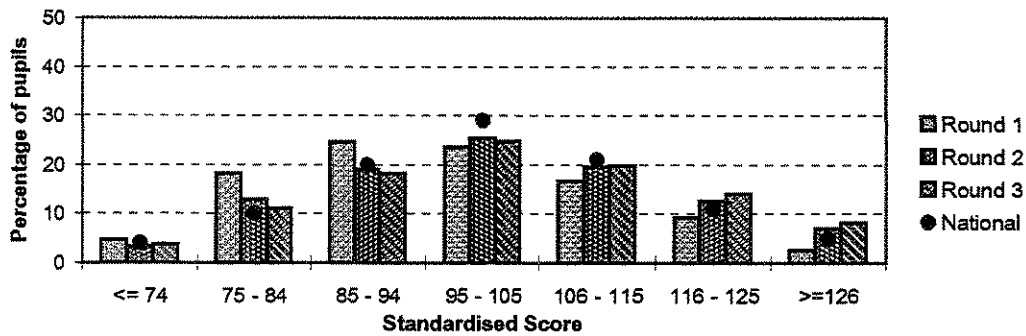
Project Level

No. of Round 1 Pupils 6269

No. of Round 2 Pupils 6656

No. of Round 3 Pupils 7206

Chart 1 : Overall Test Score distribution



The above chart shows the percentage of pupils in the project in the different age-standardised score bands for the third round of testing and compared with the National standardised score distribution. Similar distributions for the written and mental tests are shown below.

Chart 2: Written Test Score distribution

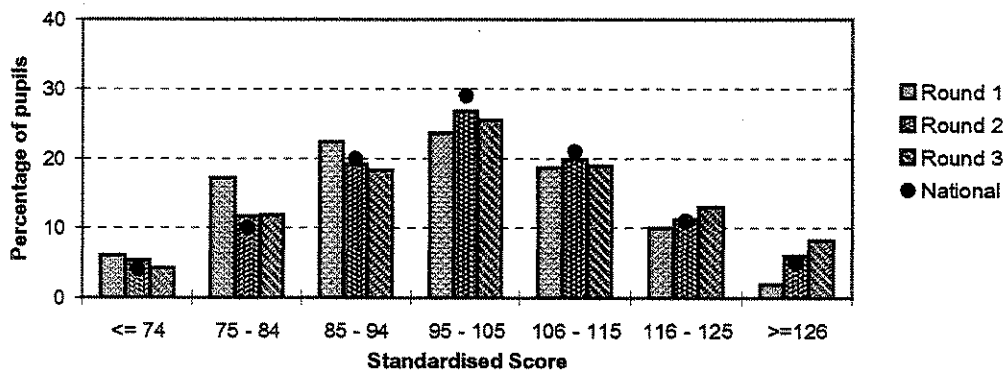
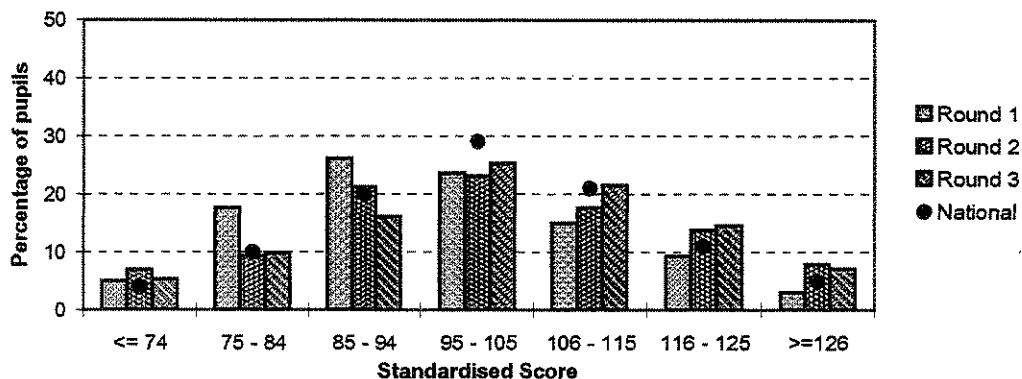


Chart 3 : Mental Test Score distribution



(continued)

National Numeracy Project - June 1998

Year : 3

Cohort : 1

Project Level

No. of Round 1 Pupils

6269

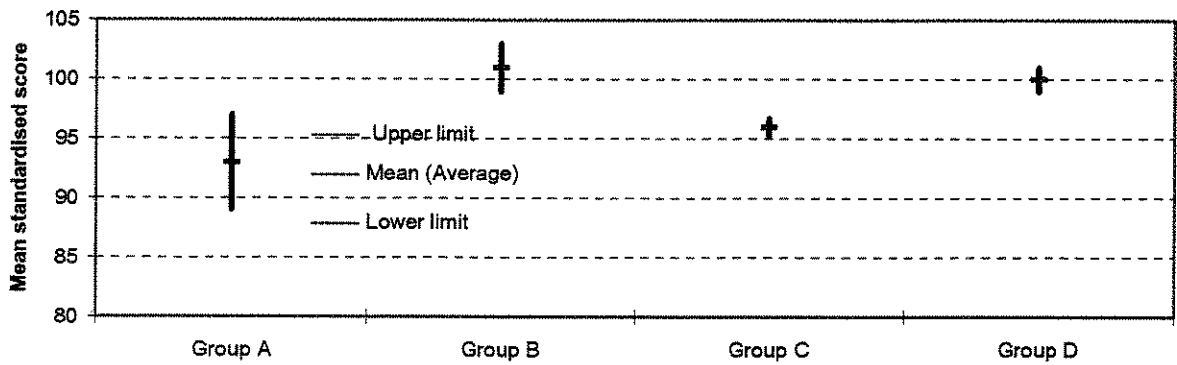
No. of Round 2 Pupils

6656

No. of Round 3 Pupils

7206

Example Chart : Mean scores



The above example shows, for each of four groups, the mean (average) standardised score and an estimate of the "95% confidence band" for each of these mean scores. Such a band means that we can be 95% certain that the mean score lies between the upper and lower limits of the vertical line, as annotated for Group A. If the top of a vertical line is lower than the bottom of another vertical line, then it is likely that there is a real difference between the two groups. If on the other hand the vertical lines overlap, then it is likely that any difference between the two scores is not significant. In this example, the difference between Groups A and B is likely to be real but the difference between Groups B and D is not significant.

Chart 4 : Mean scores for third round of testing

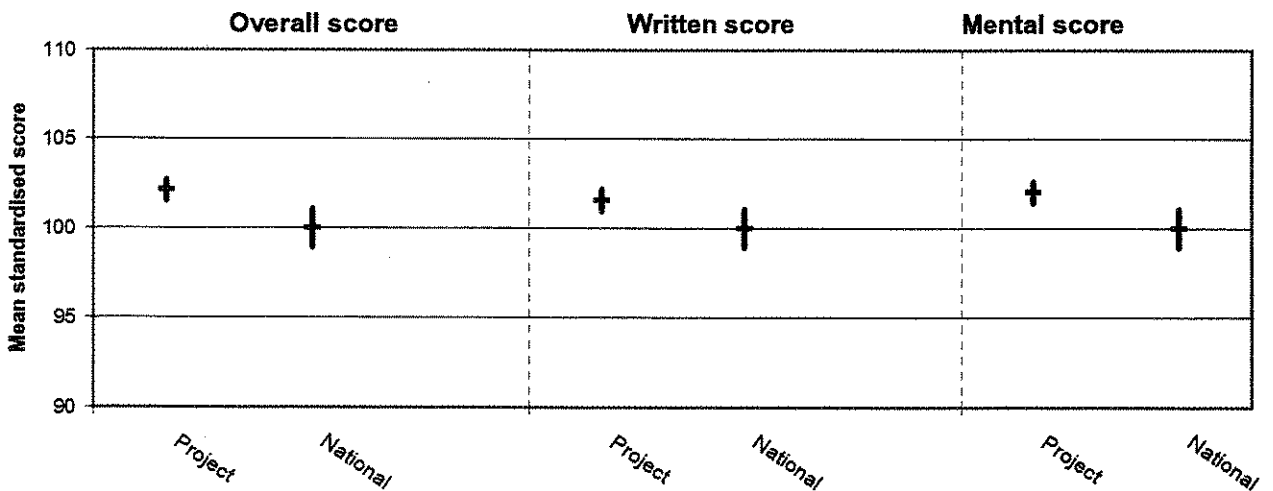


Chart 4 shows the mean (average) score for the Project and compares it with the National Standardisation sample.

(continued)

National Numeracy Project - June 1998

Year : 3

Cohort : 1

Project Level

No. of Round 1 Pupils

6269

No. of Round 2 Pupils

6656

No. of Round 3 Pupils

7206

Chart 5 : Mean project scores for third round of testing

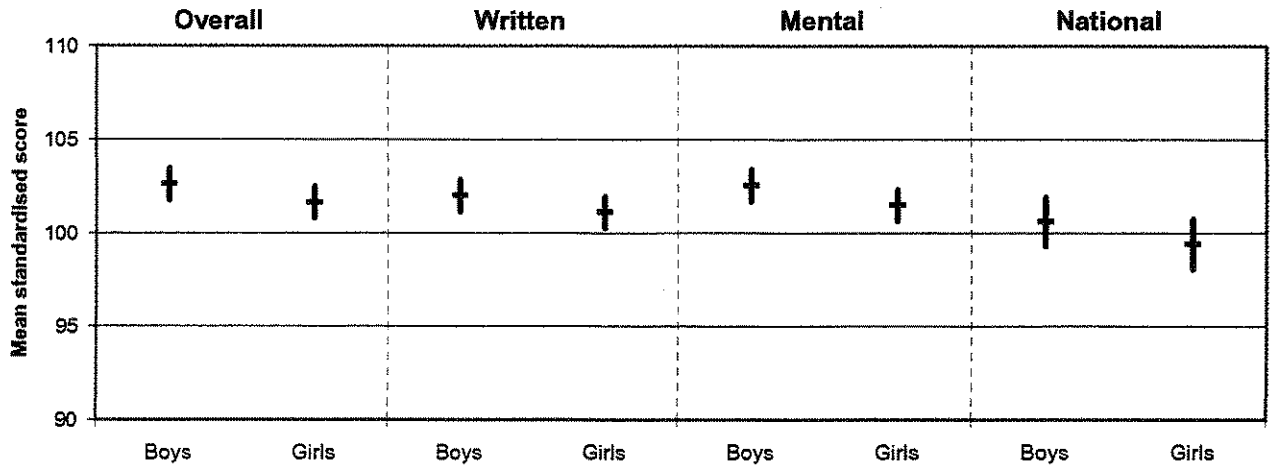


Chart 5 shows the mean (average) score in the project separately for boys and girls and compares it with the National Standardisation sample.

Chart 6 : Mean Standardised scores by term of Birth

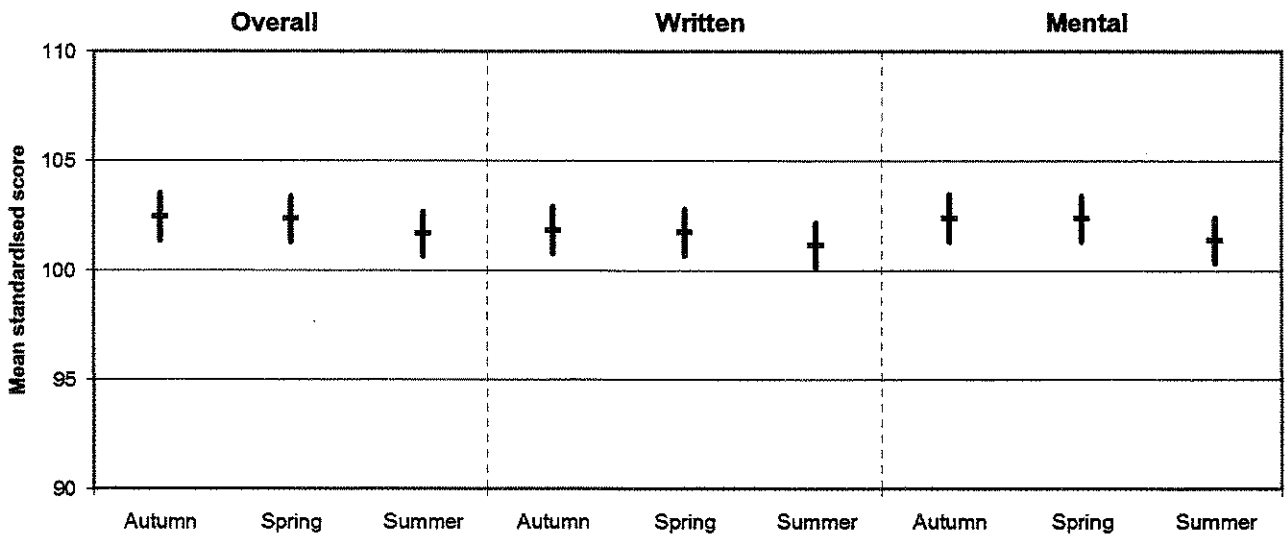


Chart 6 shows the comparison of the mean (average) score of pupils born in the Autumn, Spring and Summer.

(continued)

National Numeracy Project - June 1998

Year : 3

Cohort : 2

Project Level	No. of Round 1 Pupils	6269
	No. of Round 2 Pupils	6656
	No. of Round 3 Pupils	7206

Chart 7 : Mean Progress scores from Round 2 to Round 3

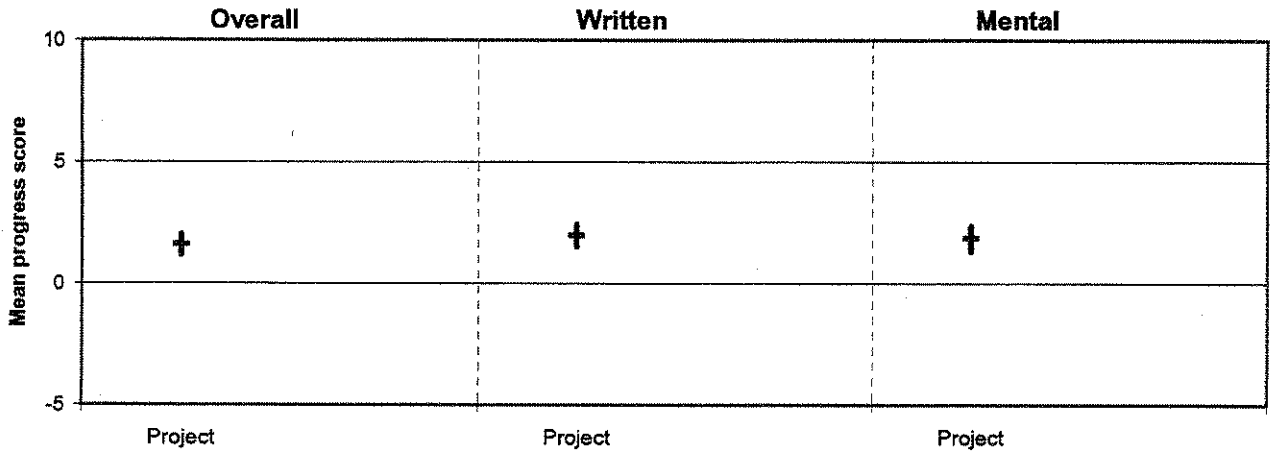
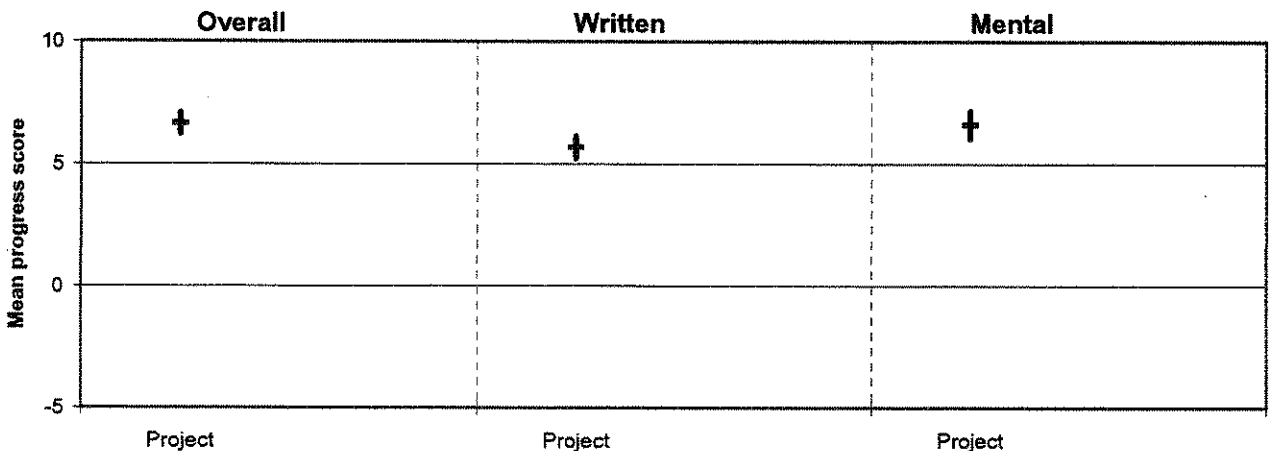


Chart 7 shows the average progress made by the pupils between the second and third rounds of testing. Progress is measured by the difference in the standardised scores between both rounds of testing. The average progress score for your LEA is compared with the pupils in the Project. Any line which lies completely above the horizontal zero line indicates significant progress from Round 2 to Round 3.

Chart 8 below is a similar plot for the progress made from the first to the third rounds of testing, that is the total amount of progress made during the project, in terms of increase in standardised score points over and above what might have been expected due to maturation.

Chart 8 : Mean Progress scores from Round 1 to Round 3



Cohort 1 – Year 4

Contents:

Project Report 1	Standardised scores and progress measures by background data for Project
Project Report 2	Round 3 Standardised scores by LEA
Project Report 3	Progress scores (Round 1-3) by LEA
Project Report 4	Progress scores at each stage of testing by LEA
Item Facilities Report	Comparison of % of correct answers for Project with % from National Standardisation sample
Chart 1	Round 3 Overall Test Score distribution
Chart 2	Round 3 Written Test Score distribution
Chart 3	Round 3 Mental Test Score distribution
Chart 4	Mean scores for third round of testing
Chart 5	Mean scores for Boys and Girls
Chart 6	Mean scores by term of birth
Chart 7	Mean progress scores (Round 2 to Round 3)
Chart 8	Mean progress scores (Round 1 to Round 3)

Project Report 1 - National Numeracy Project - June 1998
Cohort 1 - Year 4 - Mean Standardised Test Scores
Summary by background data- ALL LEAs

	Written Round 3		Mental Round 3		Overall Round 3		Written Progress		Mental Progress		Overall Progress		No. of pupils absent	Total no. of pupils	Percent of pupils
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.			
Total	102.2	16.0	103.5	16.3	103.0	16.0	6.0	10.1	8.5	12.6	7.6	9.5	348	7936	100%
Gender															
Boys	102.5	16.5	104.0	16.7	103.4	16.5	6.4	10.3	8.6	12.7	7.9	9.7	186	4121	52%
Girls	101.9	15.5	103.0	15.8	102.7	15.4	5.6	9.9	8.3	12.5	7.3	9.3	159	3807	48%
Not known	95.8	16.0	95.4	17.8	95.6	16.1							3	8	0%
Ethnic group															
White	103.3	15.9	104.4	16.1	104.1	15.8	5.9	10.0	8.0	12.2	7.3	9.2	269	5547	70%
Black Caribbean	101.5	16.0	103.4	15.9	102.6	15.7	8.9	11.5	11.8	15.1	10.8	11.2	3	296	4%
Black African	100.5	16.4	102.6	16.8	101.6	16.5	8.4	11.0	12.3	15.5	10.8	10.8	6	150	2%
Black Other	100.7	15.2	104.0	15.9	102.1	15.4	5.4	10.3	8.5	13.2	7.1	10.1	1	98	1%
Indian	101.8	16.4	104.0	15.6	102.9	16.1	5.3	10.2	9.3	11.8	7.3	9.5	3	360	5%
Pakistani	97.1	15.6	98.8	15.9	97.8	15.6	5.0	9.0	8.3	12.4	6.9	8.7	20	624	8%
Bangladeshi	99.0	15.4	99.3	16.8	99.4	15.7	7.0	11.1	10.4	14.3	9.2	10.7	23	465	6%
Other	102.4	16.6	103.5	17.6	103.1	16.9	7.0	10.7	10.0	13.7	8.8	10.5	18	376	5%
Not known	96.5	17.9	100.5	19.2	97.7	18.4							5	20	0%
Receives Free School Meals?															
Yes	97.5	15.6	98.9	16.0	98.2	15.6	5.7	10.3	8.2	12.9	7.4	9.7	138	3015	38%
No	105.7	15.6	106.9	15.7	106.5	15.5	6.4	10.1	8.8	12.3	8.0	9.4	166	4330	55%
Not known	101.3	14.8	102.5	15.8	102.0	15.0	4.5	9.0	7.2	13.2	6.1	9.2	44	591	7%
None	106.4	14.4	107.5	14.9	107.3	14.3	6.3	9.8	9.1	12.6	8.0	9.3	218	5679	72%
Stage 1	93.5	13.8	95.4	13.8	94.2	13.6	6.0	10.0	8.8	11.6	7.8	9.1	41	847	11%
Stage 2	91.6	15.1	93.0	15.5	92.1	15.1	5.8	11.5	6.3	12.5	6.6	10.4	39	753	9%
Stage 3	84.5	13.4	87.4	14.1	85.2	13.5	3.0	10.1	5.5	12.1	4.8	9.9	17	261	3%
Stage 4 or above	84.2	15.8	85.5	15.9	84.4	15.6	4.3	11.5	5.8	13.3	5.7	10.8	14	190	2%
Not known	99.4	13.7	99.7	15.1	99.9	13.9	4.2	11.1	4.2	13.6	4.8	10.8	19	206	3%
New to English	85.7	14.0	86.9	14.8	85.8	13.9	4.6	10.8	4.6	13.0	5.5	9.7	7	111	1%
Becoming familiar with English	95.6	15.6	96.1	15.8	95.9	15.5	6.5	10.6	9.2	13.1	8.4	10.1	16	542	7%
Becoming confident with English	99.3	15.0	101.0	15.4	100.1	15.0	6.0	10.4	9.9	13.6	8.1	10.1	21	674	8%
Very fluent in most contexts	105.9	14.9	108.0	15.0	107.1	14.8	7.0	10.0	11.3	12.7	9.3	9.6	13	470	6%
English first language	103.4	15.9	104.7	16.1	104.2	15.9	6.0	10.1	8.3	12.4	7.6	9.4	271	5916	75%
Not known	96.8	13.8	97.7	15.2	97.2	13.9	3.0	8.6	3.0	11.7	3.3	7.8	20	223	3%

* Number of pupils absent from overall testing

Project Report 1 - National Numeracy Project - June 1998
Cohort 1 - Year 4 - Mean Standardised Test Scores
Summary by background data- ALL LEAs

	Written Round 3		Mental Round 3		Overall Round 3		Written Progress		Mental Progress		Overall Progress		No. of pupils absent	Total no. of pupils	Percent of pupils
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.			
4 terms or less	93.6	17.2	95.8	16.4	94.3	16.6	1.4	7.9	6.1	8.1	3.9	6.1	2	32	0%
6	101.1	18.6	101.7	19.6	101.6	19.1	9.1	14.7	7.8	15.8	8.5	13.8	1	82	1%
9	101.9	16.0	103.5	16.0	102.8	15.7	5.9	10.0	6.8	12.7	6.7	9.4	7	285	4%
12	102.7	16.0	103.9	16.2	103.5	16.0	6.1	10.1	8.5	12.4	7.7	9.4	242	6028	76%
15	101.0	14.6	101.5	15.2	101.6	14.6	6.2	10.0	9.0	13.6	8.0	10.4	23	378	5%
18	110.4	11.8	111.9	14.0	111.7	12.7	10.5	7.3	9.9	12.3	11.1	8.2	2	49	1%
Not known	100.0	15.9	102.3	16.8	101.1	16.1	4.8	9.8	8.9	13.4	7.0	9.5	71	1082	14%
1	89.6	12.6	91.3	12.6	90.1	12.2	4.9	10.6	7.1	12.1	6.5	9.7	55	1365	17%
2	106.6	12.9	107.6	13.4	107.5	12.7	6.8	10.2	9.1	12.7	8.4	9.5	127	3518	44%
3	119.9	10.5	119.7	11.7	120.8	10.4	5.7	8.0	8.2	10.7	7.0	7.8	18	587	7%
Not Known	98.6	16.4	100.5	17.3	99.5	16.7	5.4	10.0	8.5	13.3	7.2	9.7	148	2466	31%
1	89.4	12.2	91.3	12.4	89.9	11.9	5.0	10.2	7.8	12.2	6.8	9.4	53	1221	15%
2	105.5	13.1	107.2	13.4	106.6	13.0	6.5	9.9	8.9	12.6	8.0	9.3	24	662	8%
2A	112.6	11.4	113.4	12.7	113.7	11.3	7.3	9.7	9.4	12.3	8.7	9.0	30	1019	13%
2B	106.1	11.3	107.4	12.4	107.1	11.1	7.5	10.4	10.2	12.6	9.2	9.5	41	942	12%
2C	100.0	12.5	101.4	13.1	100.8	12.1	7.3	11.2	10.2	13.3	9.3	10.4	41	1116	14%
3	119.2	10.3	119.1	11.9	120.1	10.4	6.2	8.3	8.6	11.6	7.6	8.2	18	826	10%
Not Known	96.2	16.2	97.7	16.7	96.9	16.3	3.8	9.9	5.8	12.6	5.2	9.4	141	2150	27%

* Number of pupils absent from overall testing

Project Report 2 - National Numeracy Project - June 1998
Cohort 1 - Round 3 - Mean Standardised Test Scores
Summary by LEA

Year Group: 4

	Written		Mental		Overall		No. of pupils absent	Total no. of pupils	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.			
Total	102.2	16.0	103.5	16.3	103.0	16.0	348	7936	
LEA	1	101.8	16.9	101.6	16.3	102.1	16.5	19	473
	2	107.3	15.0	108.5	14.6	108.2	14.7	32	754
	3	102.9	15.6	102.8	15.3	103.3	15.4	4	408
	4	101.7	16.3	104.3	16.5	103.0	16.3	42	661
	5	102.0	15.6	103.3	16.2	102.8	15.7	34	762
	6	101.2	17.5	102.4	18.4	101.9	17.7	26	523
	7	101.0	15.7	104.1	16.9	102.4	15.9	25	436
	8	103.3	15.1	105.4	15.9	104.4	15.2	23	557
	9	104.0	15.5	104.6	15.9	104.6	15.5	32	662
	10	100.3	15.6	101.2	17.3	101.0	16.1	25	575
	12	97.9	15.2	100.1	15.6	98.9	15.2	46	918
	14	103.8	16.6	104.8	15.8	104.5	16.3	16	605
15	102.4	15.9	102.2	15.9	102.7	15.9	24	602	

Project Report 3 - National Numeracy Project - June 1998
Cohort 1 - Round 3 - Mean Progress Standardised Test Scores
Summary by LEA

Year Group: 4

	Written Progress Score: Round3 - Round2		Mental Progress Score: Round3 - Round2		Overall Progress Score: Round3 - Round2		Written Progress Score: Round3 - Round1		Mental Progress Score: Round3 - Round1		Overall Progress Score: Round3 - Round1		No. of pupils absent	Total no. of pupils
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.		
Total	3.9	9.8	4.7	12.0	4.3	9.1	6.0	10.1	8.5	12.6	7.6	9.5	1564	7936
1	6.0	10.4	4.3	12.9	5.5	9.7	7.9	12.0	8.3	13.8	8.8	11.3	97	473
2	3.9	10.4	4.0	11.2	4.0	9.5	7.6	10.4	9.8	11.8	9.2	9.5	112	754
3	1.1	10.0	1.3	10.6	1.2	9.2	4.7	9.7	4.5	10.5	5.2	8.7	69	408
4	4.1	9.3	6.4	11.7	5.1	8.7	4.8	10.0	9.4	12.6	7.2	9.2	111	661
5	3.8	8.8	5.3	11.1	4.4	7.9	5.2	9.2	7.3	11.3	6.5	8.6	163	762
6	4.5	11.2	5.7	14.8	5.2	10.9	8.1	11.3	11.6	16.0	10.1	11.4	143	523
7	3.6	11.1	5.6	12.4	4.5	10.0	4.8	9.8	7.0	12.9	6.1	9.5	110	436
8	3.6	8.7	5.2	11.3	4.2	8.2	5.5	9.8	9.5	12.1	7.7	9.1	80	557
9	3.9	9.6	3.7	11.3	3.8	8.6	6.3	9.6	7.6	12.4	7.4	9.2	120	662
10	4.0	10.4	6.1	14.3	4.9	9.9	6.7	10.8	10.7	14.2	9.2	10.6	138	575
12	3.4	9.4	5.0	11.5	4.1	8.8	4.2	9.1	8.6	11.7	6.5	8.5	229	918
14	5.0	9.2	5.6	11.6	5.4	8.7	7.4	9.9	10.4	11.9	9.3	9.2	84	605
15	4.1	8.7	2.4	11.0	3.7	7.9	5.8	9.6	4.6	11.4	6.0	8.6	108	602
LEA														

Project Report 4 - National Numeracy Project - June 1998
Cohort 1 - Round 3 - Mean Progress Standardised Test Scores
Summary by LEA

Year Group: 4

	Written Rounds (2-1)		Mental Rounds (2-1)		Overall Rounds (2-1)		Written Rounds (3-2)		Mental Rounds (3-2)		Overall Rounds (3-2)		Written Rounds (3-1)		Mental Rounds (3-1)		Overall Rounds (3-1)		No. of pupils absent	Total no. of pupils
	Mean		Mean		Mean		Mean		Mean		Mean		Mean		Mean		Mean			
Total	2.1	3.8	3.3	3.9	4.7	4.3	6.0	8.5	7.6	1564	7936									
1	2.1	4.6	3.8	6.0	4.3	5.5	7.9	8.3	8.8	97	473									
2	3.6	5.5	5.0	3.9	4.0	4.0	7.6	9.8	9.2	112	754									
3	3.6	3.1	3.9	1.1	1.3	1.2	4.7	4.5	5.2	69	408									
4	.7	3.0	2.2	4.1	6.4	5.1	4.8	9.4	7.2	111	661									
5	1.3	2.2	2.2	3.8	5.3	4.4	5.2	7.3	6.5	163	762									
6	3.4	5.8	5.0	4.5	5.7	5.2	8.1	11.6	10.1	143	523									
7	1.5	1.3	1.8	3.6	5.6	4.5	4.8	7.0	6.1	110	436									
8	1.9	4.2	3.4	3.6	5.2	4.2	5.5	9.5	7.7	80	557									
9	2.3	3.7	3.5	3.9	3.7	3.8	6.3	7.6	7.4	120	662									
10	3.0	4.7	4.5	4.0	6.1	4.9	6.7	10.7	9.2	138	575									
12	.3	3.3	2.0	3.4	5.0	4.1	4.2	8.6	6.5	229	918									
14	2.7	5.5	4.4	5.0	5.6	5.4	7.4	10.4	9.3	84	605									
15	1.6	2.4	2.4	4.1	2.4	3.7	5.8	4.6	6.0	108	602									
LEA																				

National Numeracy Project - June 1998

Year : 4

Cohort: 1

Item Facilities Report							Project - National Difference
Item No.	Written Test	Mathematical content			Project	National	
40	Number sequence, with negative numbers, subtract 3	Write the next number: 13, 10, 7, 4, 1, _	N		31%	11%	20%
21	Fraction recognition (half)	Recognise that half the square is shaded	F		58%	45%	14%
34	Find perimeter of rectangle	Rectangle 14cm x 10 cm. What is the perimeter?	A	I	53%	40%	13%
37	Recognise prime numbers	Write a prime number greater than 13	N		20%	9%	11%
31	Approximate addition of three digit numbers	Best approximation for 897+ 406. 800+400, 950+410, 97+400, 900+400, 800+5	G		34%	23%	11%
36	Percentage recognition	What percentage of rectangle is shaded? (50%)	F		24%	14%	9%
16	Order decimal numbers	Arrange from smallest: 3.6, 3.2, 12.9, 0.5, and 2.3	P	F	78%	71%	8%
27	2 step word problem, involving x and +	3 oranges @ 11p, and 1 pineapple @ 95p	A	E	40%	32%	7%
20	Multiply three digit number by 3 (no carrying)	103 x 3 = _	M	X	52%	45%	7%
26	Numbers divisible by 5 with no remainder	Ring 2 numbers from: 8, 36, 15, 53, 11, 40	N		55%	48%	7%
23		46 ÷ _ = 23	D	B	43%	37%	7%
17	Doubling	Double 17	M		74%	68%	6%
32	Subtract length (in mm and cm) in a word problem	Cut 36cm from 2m length. How much left?	S	L	21%	15%	6%
12		60 - 7 = _	S	X	73%	68%	6%
33	Subtract fraction from a mixed number	1½ - ¼ = _	S	F	26%	20%	6%
43	Divide three digit number by 8, no remainder	816 ÷ 8 = _	D	X	16%	11%	5%
35	Convert centimetres to millimetres	How many millimetres is 11 centimetres?	M	L	24%	18%	5%
45	Multiply a decimal by 10	7.5 x 10 = _	M	F	12%	7%	5%
13	Place value	Ring number with 7 tens. 7, 69, 78, 107, 707	P		66%	62%	5%
8		86 - _ = 67	S	B	78%	73%	5%
25	Read weight from scale	Read 400g from scale 0 to 3 kg - marked every 500g	R		52%	48%	5%
30	Division of two digit number by 7, no remainder	84 ÷ 7 = _	D	X	32%	28%	4%
14	Subtract times (minutes) in word problem	Analogue clock. How long from 1:20 to 1:45?	S	T	57%	53%	4%
10	Add three digit numbers, no crossing	332 + 514 = _	A	X	76%	72%	4%
11	Estimate to nearest £10	Ring nearest to £10. £10.35, £11.00, £9.91, £10.26, £9.79	G	E	69%	65%	4%
28	Addition of three digit number, with carrying	435 + 397 = _	A	X	49%	45%	3%
39	Divide two digit number by 4, with remainder	93 ÷ 4 = _	A	X	13%	9%	3%
9	Add two digit numbers, crossing tens	27 + 36 = _	A	X	75%	72%	3%
24	Multiply two digit number by 6, with carrying	95 x 6 = _	M	X	18%	15%	3%
19	Division of two digit number by 3, in word problem	24 seeds in 3 rows. Seeds in each row?	D	E	55%	52%	3%

National Numeracy Project - June 1998
Year : 4 Cohort: 1

Item Facilities Report

Item Facilities Report						Project - National Difference	
Item No.	Written Test	Mathematical content			Project	National	
42a	Finding a fraction of an area	Grid of cm squares is 6cm * 10cm. Half is shaded. How many cm squares are shaded?	I	F	12%	10%	2%
41	Average speed, in word problem	Car travels 120 miles in 3 hours. Average speed?	D	T	14%	12%	2%
42b	Finding a percentage of an area	How many cm squares are there in 25% of the grid?	%		7%	5%	2%
44	Percentage of money	What is 75% of £160?	%		5%	3%	2%
2	Read a scale (whole numbers)	Scale numbered in 5s from 0 to 15, read 8	R		83%	81%	2%
5		$_ + _ = 70$	A	O	92%	90%	2%
47	Multiply two digit numbers	$37 \times 28 = _$	M	X	2%	1%	2%
38	Subtract four digit number from 3000	$3000 - 1997 = _$	S	X	15%	13%	1%
22	Multiply two digit number by 10, in word problem	20 packs, 10 boxes in each. How many boxes? (20×10)	M	E	50%	49%	1%
46	Add fractions	$5/8 + 1/4 = _$	A	F	3%	2%	1%
18		$75 - _ = 67$	S	B	59%	58%	1%
29	Subtraction of three digit number, crossing tens	$354 - 159 = _$	S	X	21%	20%	0%
6	Subtract money, in a word problem	Bananas cost 18p. Meera has 6p. How much more does she need?	S	£	82%	82%	0%
1	Number line with numbers less than 10 (decreasing)	Missing numbers in sequence 9, 8, 7, $_$, $_$, 4	N		98%	98%	0%
4	Add 10 to a two digit number	$83 + 10 = _$	A	X	93%	93%	0%
7	Read a graph	Bar charts, scale in ones. Read seaweed	R	H	92%	94%	-1%
15a	Multiply single digit numbers, in word problem	7 cards of buttons, each with 5 (7×5)	M	E	71%	73%	-2%
3	Subtract single digit numbers, in word problem	Emma has 4 apples & Jane 7. How many more has Jane?	S	E	81%	83%	-2%
15b	Two step word problem (+ and -)	2 cards of round buttons & 3 of square	M	E	60%	63%	-3%

National Numeracy Project - June 1998
Year : 4 Cohort: 1

Item Facilities Report							Project - National
Item No.	Mental Test	Mathematical content			Project	National	Difference
7	'Write to nearest hundred'	Write 254 to the nearest hundred	G		58%	39%	19%
12	'Multiplied by itself'	What number multiplied by itself gives 36?	M	B	37%	22%	15%
9	'Write in figures'	Write in figures the number 1072	P		67%	52%	15%
13	'Subtract', using two digit numbers	What is 89 subtract 25?	S		32%	23%	9%
20	'Divide by 2, no remainder	Divide 16 by 2	D		57%	49%	8%
19	'Multiplied by 6	15 multiplied by 6	M		17%	9%	8%
17	'Divide' by 9, no remainder	72 divided by 9	D		25%	18%	7%
21	'One fifth of'	What is one fifth of twenty?	F		24%	17%	7%
15	'Divide' by 100, no remainder	Divide 700 by 100	D		29%	22%	7%
18	Multiplication of money, in a word problem	A T-shirt costs £3.95. How much do 2 cost?	A	£	23%	17%	7%
16	'Take from'	What must I take from 43 to leave 9?	S	B	20%	13%	7%
10	'I take away a number...it leaves...what is the number?'	I take away a number from 81. It leaves 72. What is the number?	S	B	55%	48%	6%
6	'Total' of 4 single digit numbers, with pairs of numbers making ten	What is the total of 8, 3, 7, and 2?	A		65%	59%	6%
14	'Difference'	Write two numbers which have a difference of 12	S	O	21%	16%	6%
22	'Share equally among' 4	Share 92 equally among 4	D		10%	5%	5%
8	'More than'	What is 8 more than 72?	A		62%	59%	3%
3	'How many altogether?', add ten to a two digit number	How many are 39 and 10 altogether?	A		85%	82%	3%
24	'15 percent of'	What is 15% of 200?	F		3%	2%	1%
4	'Lots of' ten	What is 8 lots of 10?	M		86%	85%	1%
2	'Add', using single digit numbers, crossing ten	What is 5 add 9?	A		91%	90%	1%
23	'Estimate' a division, in a word problem	A pile of 10 coins is 19 millimetres high. Estimate the thickness of one coin	D	G	15%	15%	0%
11	'How many sevens in...?'	How many sevens in 35?	D		44%	44%	0%
5	Multiplication by 5 in a word problem	I have 3 dominoes. Each domino has 5 dots. How many dots altogether on the three dominoes?	M	E	88%	89%	0%
1	Addition of money in word problem	Mark has a 20p coin. Vijay gives him 6p. How much has he now?	A	£	92%	93%	-1%

National Numeracy Project - June 1998

Year : 4

Cohort : 1

Project Level

No. of Round 1 Pupils

6628

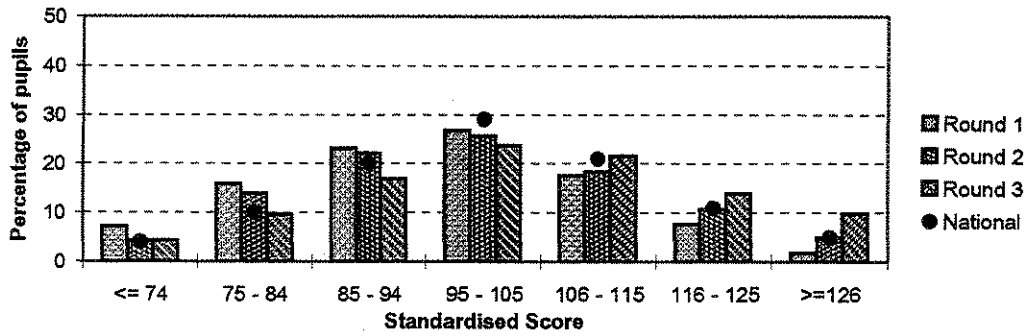
No. of Round 2 Pupils

7007

No. of Round 3 Pupils

7588

Chart 1 : Overall Test Score distribution



The above chart shows the percentage of pupils in the project in the different age-standardised score bands for the third round of testing and compared with the National standardised score distribution. Similar distributions for the written and mental tests are shown below.

Chart 2: Written Test Score distribution

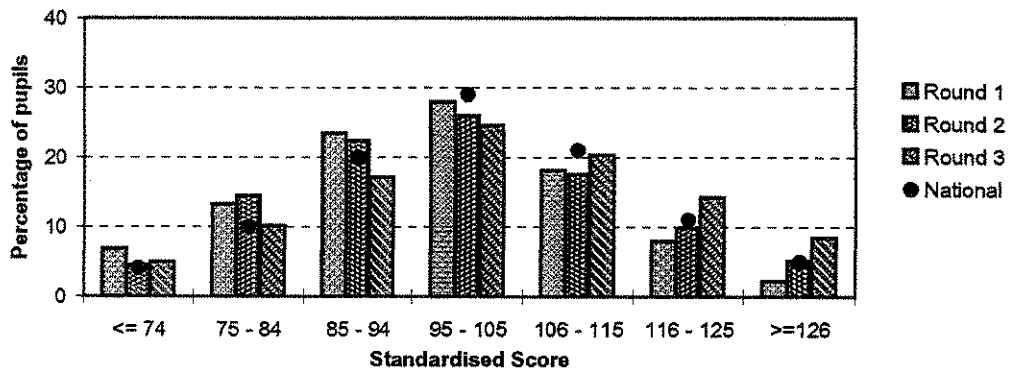
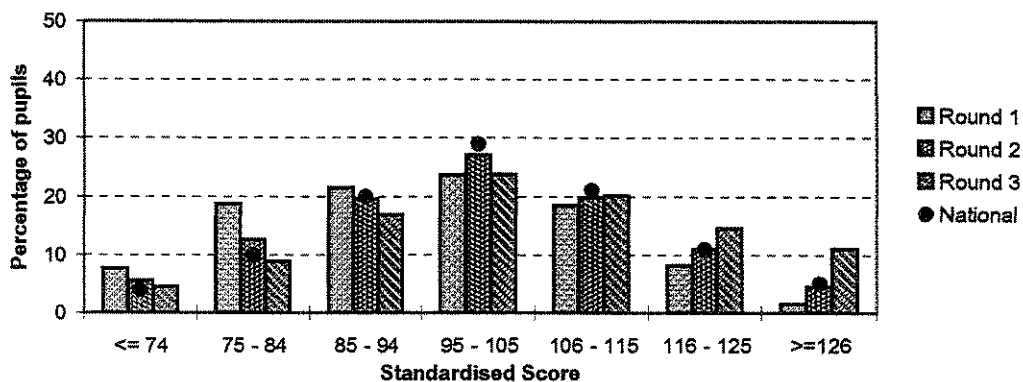


Chart 3 : Mental Test Score distribution



(continued)

National Numeracy Project - June 1998

Year : 4

Cohort : 1

Project Level

No. of Round 1 Pupils

6628

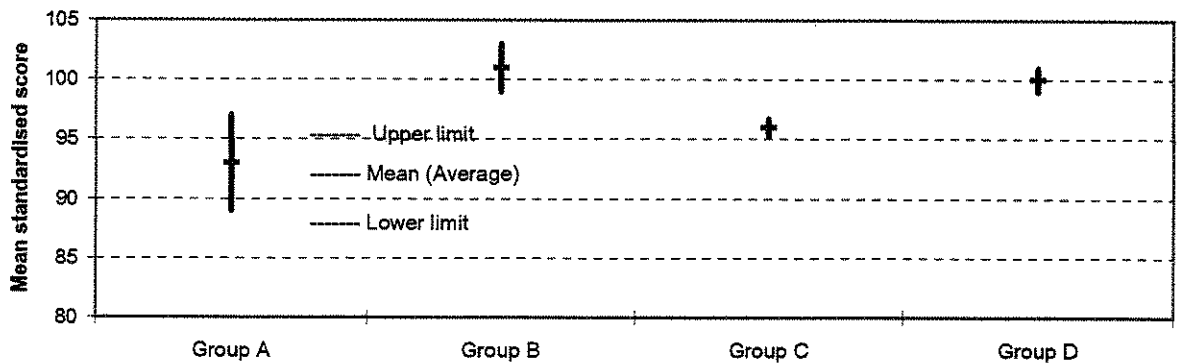
No. of Round 2 Pupils

7007

No. of Round 3 Pupils

7588

Example Chart : Mean scores



The above example shows, for each of four groups, the mean (average) standardised score and an estimate of the "95% confidence band" for each of these mean scores. Such a band means that we can be 95% certain that the mean score lies between the upper and lower limits of the vertical line, as annotated for Group A. If the top of a vertical line is lower than the bottom of another vertical line, then it is likely that there is a real difference between the two groups. If on the other hand the vertical lines overlap, then it is likely that any difference between the two scores is not significant. In this example, the difference between Groups A and B is likely to be real but the difference between Groups B and D is not significant.

Chart 4 : Mean scores for third round of testing

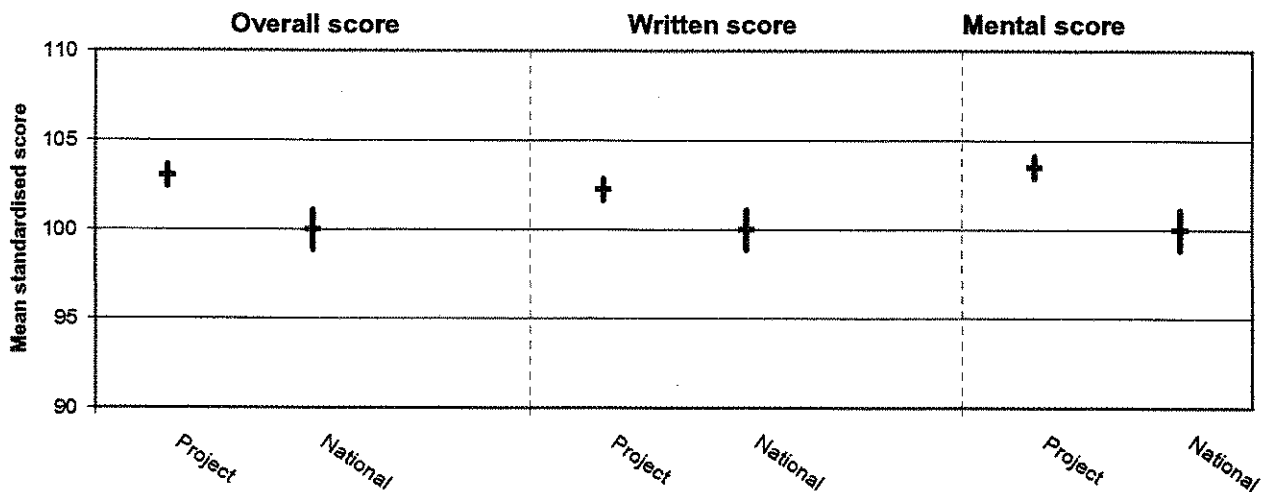


Chart 4 shows the mean (average) score for the Project and compares it with the National Standardisation sample.

(continued)

National Numeracy Project - June 1998

Year : 4

Cohort : 1

Project Level

No. of Round 1 Pupils

6628

No. of Round 2 Pupils

7007

No. of Round 3 Pupils

7588

Chart 5 : Mean project scores for third round of testing

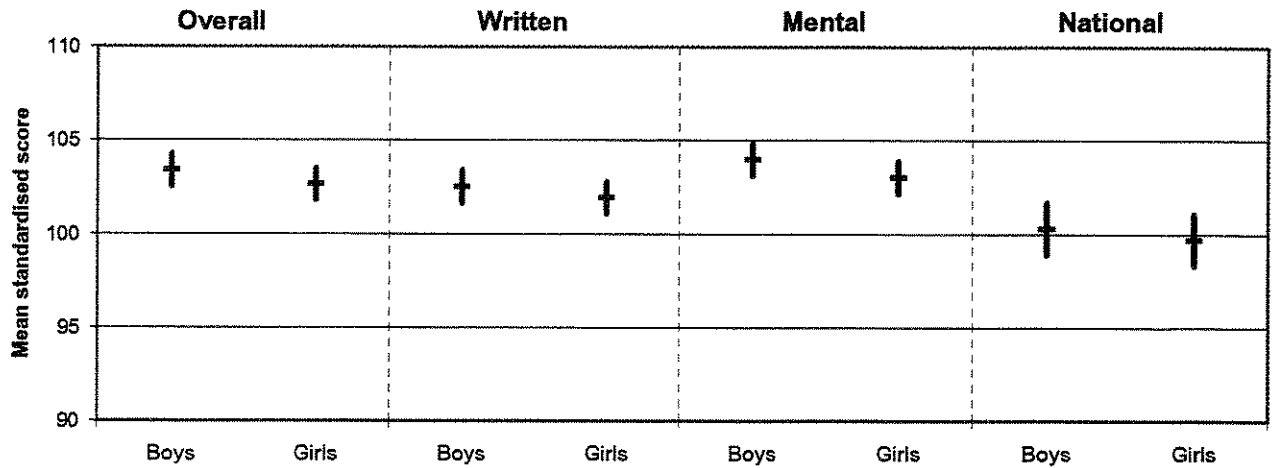


Chart 5 shows the mean (average) score in the project separately for boys and girls and compares it with the National Standardisation sample.

Chart 6 : Mean Standardised scores by term of Birth

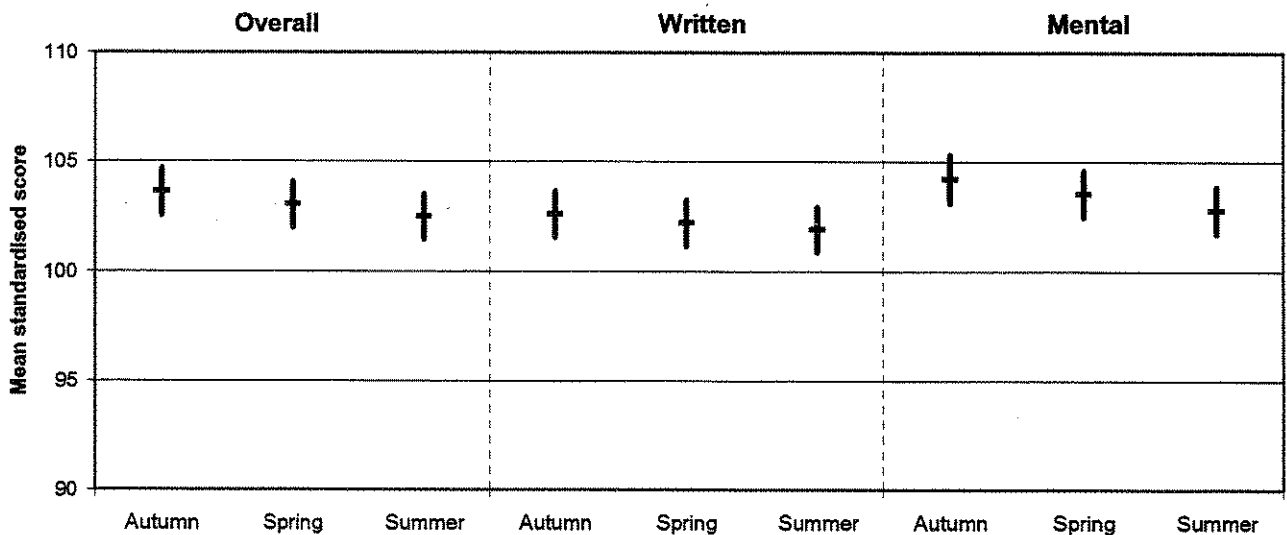


Chart 6 shows the comparison of the mean (average) score of pupils born in the Autumn, Spring and Summer.

(continued)

National Numeracy Project - June 1998

Year : 4

Cohort : 2

Project Level

No. of Round 1 Pupils

6628

No. of Round 2 Pupils

7007

No. of Round 3 Pupils

7588

Chart 7 : Mean Progress scores from Round 2 to Round 3

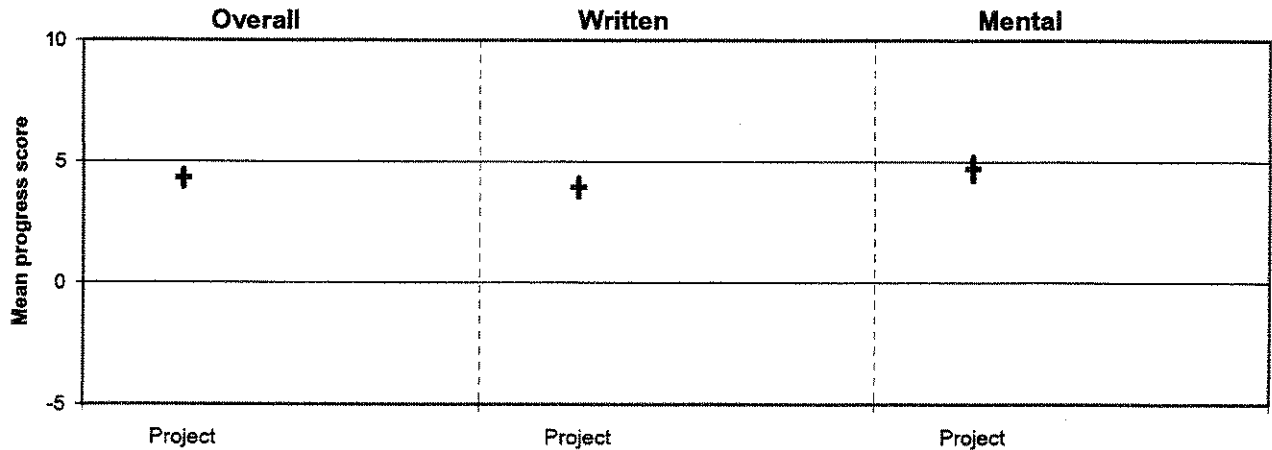
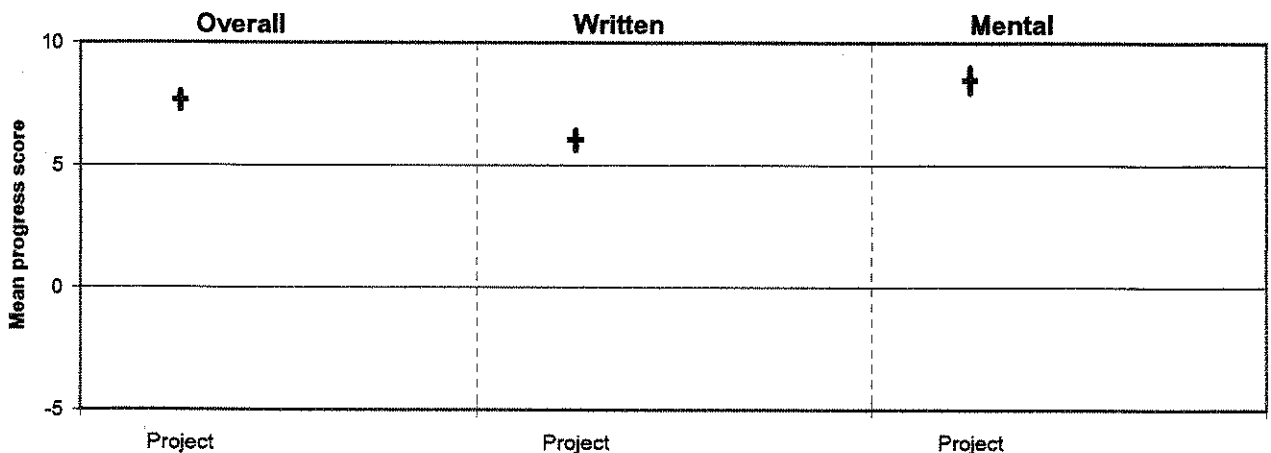


Chart 7 shows the average progress made by the pupils between the second and third rounds of testing. Progress is measured by the difference in the standardised scores between both rounds of testing. The average progress score for your LEA is compared with the pupils in the Project.

Any line which lies completely above the horizontal zero line indicates significant progress from Round 2 to Round 3.

Chart 8 below is a similar plot for the progress made from the first to the third rounds of testing, that is the total amount of progress made during the project, in terms of increase in standardised score points over and above what might have been expected due to maturation.

Chart 8 : Mean Progress scores from Round 1 to Round 3



Cohort 1 – Year 6

Contents:

Project Report 1	Standardised scores and progress measures by background data for Project
Project Report 2	Round 3 Standardised scores by LEA
Project Report 3	Progress scores (Round 1-3) by LEA
Project Report 4	Progress scores at each stage of testing by LEA
Item Facilities Report	Comparison of % of correct answers for Project with % from National Standardisation sample
Chart 1	Round 3 Overall Test Score distribution
Chart 2	Round 3 Written Test Score distribution
Chart 3	Round 3 Mental Test Score distribution
Chart 4	Mean scores for third round of testing
Chart 5	Mean scores for Boys and Girls
Chart 6	Mean scores by term of birth
Chart 7	Mean progress scores (Round 2 to Round 3)
Chart 8	Mean progress scores (Round 1 to Round 3)

Project Report 1 - National Numeracy Project - June 1998
Cohort 1 - Year 6 - Mean Standardised Test Scores
Summary by background data- ALL LEAs

	Written Round 3		Mental Round 3		Overall Round 3		Written Progress		Mental Progress		Overall Progress		No. of pupils absent	Total no. of pupils	Percent of pupils
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.			
Total	98.3	15.1	101.8	16.3	99.9	15.5	3.5	8.9	6.3	11.6	5.1	8.4	466	7834	100%
Gender	98.2	15.5	102.1	16.8	99.9	15.9	3.1	8.8	5.7	11.5	4.7	8.3	228	3987	51%
	98.4	14.7	101.5	15.8	99.8	15.0	4.0	8.9	6.8	11.7	5.6	8.5	219	3828	49%
Ethnic group	99.0	15.1	102.3	16.2	100.5	15.4	3.1	8.6	5.6	11.2	4.6	8.1	339	5383	69%
	97.5	14.7	101.3	16.3	99.2	14.9	5.4	10.0	6.2	12.7	6.5	9.3	17	328	4%
	99.2	17.1	105.0	17.7	101.7	17.3	5.8	10.8	9.1	14.5	7.6	10.6	7	150	2%
	96.4	14.2	99.3	15.7	97.8	14.5	4.1	9.2	6.5	12.1	6.0	7.8	8	73	1%
	100.6	15.2	103.4	16.4	102.0	15.6	4.5	7.9	6.6	10.8	6.0	7.4	6	329	4%
	94.1	14.7	98.7	16.8	96.0	15.3	3.2	8.2	6.7	11.3	5.1	8.0	39	687	9%
	95.7	14.6	100.6	16.0	97.7	15.0	4.9	9.8	10.4	12.7	7.7	9.5	12	513	7%
	97.7	14.6	101.1	16.2	99.2	15.1	5.2	10.4	8.1	13.0	6.9	10.1	18	344	4%
	93.7	12.5	103.0	17.7	97.3	14.2							20	27	0%
	93.8	14.4	97.6	15.5	95.3	14.7	3.4	9.3	6.2	11.9	5.1	8.9	191	2939	38%
Receives Free School Meals?	101.4	15.0	104.8	16.3	103.1	15.4	3.8	8.7	6.4	11.5	5.3	8.2	209	4110	52%
	98.6	14.0	102.0	15.5	100.1	14.4	2.5	8.4	5.9	11.2	4.3	8.0	66	785	10%
	102.1	13.9	105.8	15.2	103.9	14.2	3.6	8.9	6.8	11.8	5.4	8.5	297	5765	74%
	90.0	12.6	92.9	13.2	91.0	12.5	3.6	9.3	5.3	11.2	4.8	8.6	49	669	9%
	85.0	10.7	88.3	11.5	86.0	10.7	3.0	8.4	3.5	10.3	3.8	7.6	44	700	9%
	82.7	11.5	86.0	11.7	83.6	11.3	3.4	7.4	4.4	9.9	4.5	6.6	27	276	4%
	82.1	12.6	82.9	12.4	82.2	12.2	4.4	9.6	3.2	9.8	4.7	8.0	18	203	3%
	97.7	13.9	102.9	15.5	99.9	14.4	2.7	10.1	7.5	13.8	5.1	10.1	31	221	3%
	84.5	14.1	87.7	14.3	85.5	13.7	5.8	9.2	2.9	8.9	5.7	8.9	2	36	0%
	87.7	13.3	92.0	14.9	89.1	13.8	5.3	9.0	9.1	12.2	7.3	9.0	13	297	4%
Stage of Learning English	94.4	13.9	98.4	15.5	96.1	14.3	3.8	9.3	8.0	12.2	6.1	9.1	33	772	10%
	102.0	14.3	106.4	15.7	104.1	14.6	4.6	8.8	8.0	12.1	6.6	8.4	33	753	10%
	99.0	15.1	102.3	16.3	100.6	15.5	3.3	8.8	5.6	11.3	4.7	8.2	352	5655	72%
	96.9	13.9	101.9	15.4	99.0	14.3	2.9	9.1	7.3	12.2	5.2	8.9	33	321	4%

* Number of pupils absent from overall testing

Project Report 1 - National Numeracy Project - June 1998
Cohort 1 - Year 6 - Mean Standardised Test Scores
Summary by background data- ALL LEAs

	Written Round 3		Mental Round 3		Overall Round 3		Written Progress		Mental Progress		Overall Progress		No. of pupils absent	Total no. of pupils	Percent of pupils
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.			
4 terms or less	96.4	15.0	99.4	15.0	97.5	15.2	11.0	11.4	13.8	7.4	13.5	8.1	3	16	0%
6	93.3	15.1	96.9	15.6	94.7	14.9	7.8	6.9	6.3	13.2	8.3	8.0	3	33	0%
9	94.6	16.1	99.6	17.9	96.7	17.2	6.8	13.3	13.5	11.2	10.2	12.3	3	51	1%
12	94.2	14.9	98.0	14.9	95.7	14.2	5.2	11.8	8.9	14.1	7.0	11.6	2	72	1%
15	96.9	15.1	100.5	16.1	98.5	15.3	5.8	10.0	9.4	11.5	7.9	9.1	16	288	4%
18	99.1	15.1	102.5	16.3	100.6	15.5	3.3	8.8	5.9	11.5	4.9	8.3	303	5454	70%
21	101.0	16.1	103.8	17.5	102.4	16.5	4.9	7.8	6.4	11.2	6.1	7.6	20	353	5%
24	100.8	11.5	100.0	18.1	101.0	13.9	6.7	9.2	1.8	11.0	5.8	8.8		11	0%
Not known	95.6	14.6	99.7	15.8	97.3	14.9	3.2	8.6	6.5	11.9	5.0	8.4	116	1556	20%
1	89.9	12.1	93.4	13.5	91.2	12.2	4.3	8.8	6.5	10.6	5.7	7.8	45	682	9%
2	101.6	14.6	104.7	15.3	103.1	14.8	3.7	8.8	6.2	11.2	5.2	8.4	70	1650	21%
3	105.8	14.5	109.3	15.4	107.7	14.7	2.8	8.3	4.8	11.1	4.1	8.1	21	537	7%
Not Known	97.5	15.1	101.2	16.5	99.1	15.5	3.4	8.9	6.5	12.0	5.2	8.6	330	4965	63%
1	89.4	11.8	92.3	13.1	90.4	11.8	4.3	8.4	5.7	10.7	5.5	7.7	38	508	6%
2	102.6	13.3	105.4	14.3	104.0	13.4	3.8	9.0	6.6	11.4	5.4	8.5	56	1232	16%
2A	105.0		110.0		108.0		-2.0		13.0		4.0			1	0%
2B	111.7	8.4	116.7	5.1	114.0	6.9	7.0	10.4	9.7	8.1	8.3	10.1		3	0%
2C	98.4	11.5	103.8	11.7	100.5	11.3	1.5	8.0	8.3	11.1	4.3	8.4		16	0%
3	115.2	12.8	118.5	13.6	117.3	13.0	4.3	8.4	6.8	9.7	5.8	7.9	10	270	3%
Not Known	97.3	15.0	101.1	16.3	99.0	15.4	3.3	8.9	6.2	11.9	5.0	8.5	362	5804	74%

* Number of pupils absent from overall testing

Project Report 2 - National Numeracy Project - June 1998
Cohort 1 - Round 3 - Mean Standardised Test Scores
Summary by LEA

Year Group: 6

		Written		Mental		Overall		No. of pupils absent	Total no. of pupils
		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.		
Total		98.3	15.1	101.8	16.3	99.9	15.5	466	7834
LEA	1	97.5	15.5	99.9	16.5	98.6	15.7	25	471
	2	103.2	14.4	106.3	15.6	104.8	14.6	54	762
	4	99.7	15.2	105.0	15.8	102.0	15.5	47	680
	5	99.5	14.7	101.9	15.9	100.7	15.0	39	745
	6	98.8	15.7	102.7	17.2	100.6	16.1	37	536
	7	96.7	14.1	100.0	15.1	98.2	14.2	35	449
	8	99.4	15.2	101.1	16.3	100.2	15.6	41	549
	9	100.7	14.4	104.0	15.6	102.3	14.7	25	664
	10	95.7	14.8	100.2	16.4	97.6	15.3	15	639
	12	95.0	14.8	98.8	16.1	96.6	15.3	43	902
	14	94.6	14.8	99.3	16.7	96.5	15.5	78	772
15	98.9	15.3	102.6	16.5	100.5	15.8	27	665	

Project Report 3 - National Numeracy Project - June 1998
Cohort 1 - Round 3 - Mean Progress Standardised Test Scores
Summary by LEA

Year Group: 6

	Written Progress Score: Round3 - Round2		Mental Progress Score: Round3 - Round2		Overall Progress Score: Round3 - Round2		Written Progress Score: Round3 - Round1		Mental Progress Score: Round3 - Round1		Overall Progress Score: Round3 - Round1		No. of pupils absent	Total no. of pupils
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.		
Total	.7	9.0	2.9	11.7	1.6	8.5	3.5	8.9	6.3	11.6	5.1	8.4	1494	7834
1	1.8	9.6	3.1	12.8	2.4	9.1	4.5	9.9	7.4	13.6	6.1	9.7	101	471
2	-1.8	8.3	1.7	11.6	-6	8.0	3.1	8.0	5.3	11.6	4.5	7.6	133	762
4	2.2	9.9	6.4	11.2	3.8	9.3	3.8	8.9	8.9	10.9	6.3	8.2	117	680
5	2.4	8.9	3.1	11.5	2.8	8.3	4.1	8.8	5.8	11.2	5.3	8.1	132	745
6	1.7	10.3	3.2	14.3	2.3	10.3	6.2	10.6	8.6	12.9	7.8	10.2	151	536
7	-1.2	8.4	1.5	10.3	-2	7.1	2.5	7.9	3.7	9.6	3.5	6.8	102	449
8	.3	7.3	1.5	10.2	.9	6.8	2.7	7.1	3.0	9.9	3.4	6.7	96	549
9	-.3	9.1	1.1	11.3	.2	8.5	2.6	9.1	5.2	11.5	4.2	8.6	101	664
10	1.7	9.5	4.6	12.6	2.8	9.3	4.5	9.6	9.2	12.9	7.0	9.5	102	639
12	.3	8.9	2.1	10.7	1.0	8.0	3.4	8.8	5.1	10.9	4.7	8.2	172	902
14	1.4	8.1	4.5	12.3	2.7	8.4	2.3	8.2	6.8	11.7	4.4	8.3	197	772
15	.2	8.3	2.3	10.4	1.0	7.8	3.3	9.0	6.2	11.0	5.0	8.2	90	665

Project Report 4 - National Numeracy Project - June 1998
Cohort 1 - Round 3 - Mean Progress Standardised Test Scores
Summary by LEA

Year Group: 6

	Written Rounds (2 - 1)		Mental Rounds (2 - 1)		Overall Rounds (2 - 1)		Written Rounds (3 - 2)		Mental Rounds (3 - 2)		Overall Rounds (3 - 2)		Written Rounds (3 - 1)		Mental Rounds (3 - 1)		Overall Rounds (3 - 1)		No. of pupils absent	Total no. of pupils
	Mean		Mean		Mean		Mean		Mean		Mean		Mean		Mean		Mean			
Total	2.9	3.4	3.6	.7	2.9	1.6	3.5	6.3	5.1	1494	7834									
1	2.9	4.9	4.1	1.8	3.1	2.4	4.5	7.4	6.1	101	471									
2	4.5	3.1	4.6	-1.8	1.7	-6	3.1	5.3	4.5	133	762									
4	1.7	2.8	2.5	2.2	6.4	3.8	3.8	8.9	6.3	117	680									
5	1.7	2.6	2.5	2.4	3.1	2.8	4.1	5.8	5.3	132	745									
6	5.0	4.9	5.7	1.7	3.2	2.3	6.2	8.6	7.8	151	536									
7	3.7	2.6	3.9	-1.2	1.5	-2	2.5	3.7	3.5	102	449									
8	2.5	1.7	2.7	.3	1.5	.9	2.7	3.0	3.4	96	549									
9	3.1	4.3	4.2	-3	1.1	.2	2.6	5.2	4.2	101	664									
10	3.2	5.2	4.5	1.7	4.6	2.8	4.5	9.2	7.0	102	639									
12	3.2	3.3	3.9	.3	2.1	1.0	3.4	5.1	4.7	172	902									
14	.9	2.3	1.8	1.4	4.5	2.7	2.3	6.8	4.4	197	772									
15	3.0	3.8	3.9	.2	2.3	1.0	3.3	6.2	5.0	90	665									
LEA																				

National Numeracy Project - June 1998

Year : 6

Cohort: 1

Item Facilities Report

Item Facilities Report							Project - National Difference
Item No.	Written Test	Mathematical content			Project	National	
19	Recognise a square number	Ring another square number	N		49%	42%	7%
38	Approximate multiplication of three digit decimal numbers by rounding	Approximate 4.98 x 11.05 by rounding to whole numbers	G		31%	26%	5%
12	Read a pictogram symbol representing 2 cars	Interpret total number represented	H		70%	66%	4%
34	Percentage recognition	What percentage of rectangle is shaded? 40%, 25%, 57%	%		34%	30%	4%
44	Multiply fractions	$\frac{1}{4} \times \frac{1}{2} = \underline{\hspace{1cm}}$	F		27%	24%	4%
24	Multiply a decimal by 10	$7.5 \times 10 = \underline{\hspace{1cm}}$	M	F X	41%	39%	3%
43	Find a percentage of a three digit number	25% of £185	%	£	12%	9%	3%
7	Approximate subtraction of three digit numbers	903 - 298, 900-200, 1000-200, 900-98, 1000-3000, 900-300			72%	69%	2%
13	Add decimals	$3.6 + 2.4 = \underline{\hspace{1cm}}$	F		71%	68%	2%
32	Add decimals	$13.9 + 8.22 = \underline{\hspace{1cm}}$	F		31%	29%	2%
21	Read weight from scale	Read 2.7kg from scale 0.5kg to 3.6kg marked every 0.1kg	R		59%	57%	1%
33	Convert pints to litres	Ring best equivalent to 3 litres : 3 pints, 30 pints, 2 pints, 6 pints, 1.5 pints	G		33%	32%	1%
9	2 step word problem, involving x and +	4 oranges @ 11p and 1 banana @ 23p. How much?	M	A £	83%	82%	1%
26	Read a scale (negative numbers and fractions)	Read - 2.5 from scale -4 to 2.5 marked every 0.5	D		40%	39%	1%
39	Subtract length (in m and cm) in a word problem	Cut 85cm from 2.5m length. How much is left?	S	L	25%	25%	0%
45	Average speed, in word problem	Car travels 2640 miles in 24 hours. Average speed?	D	T	21%	21%	0%
42	Subtract decimals	$14.6 - 3.75 = \underline{\hspace{1cm}}$	F		14%	14%	0%
47	Multiply decimals	$9.4 \times 1.8 = \underline{\hspace{1cm}}$	F		8%	8%	0%
11	Ring numbers which divide into 36 no remainder	Ring two factors of 36 from 3, 5, 7, 9, 11.	N		67%	67%	0%
30	Find width of a rectangle, given perimeter and length	Perimeter is 48cm, length is 14cm and width is ?	I		44%	44%	0%
1	Add weight, in a word problem	Kelly weighs 82kg, John weighs 7kg more. John's weight?	A	K	89%	89%	0%
8a	Multiply single digit numbers, in word problem	7 cards of buttons, each with 5 (7 x 5)	M	E	89%	90%	-1%
5	Add three digit numbers, no crossing in a word problem	136 infants, 245 juniors - how many children?	A		92%	93%	-1%
15	Read a scale	Mark 250 ml on a scale numbered in 0.1 of a litre.	R		69%	70%	-1%
37	Divide 3 digit number by a two digit number, no remainder	$544 \div 17 = \underline{\hspace{1cm}}$	D		22%	23%	-1%
41	Add fractions	$\frac{5}{8} + \frac{1}{4} = \underline{\hspace{1cm}}$	F		14%	15%	-1%
40	Multiply a three digit number by a two digit number	$365 \times 27 = \underline{\hspace{1cm}}$	M		21%	22%	-1%
4		$49 + \underline{\hspace{1cm}} = 55$	A	B	94%	96%	-1%
8b	Two step word problem (+ and -)	2 cards of round buttons & 3 of square	M	E	82%	84%	-1%
27	Order fractions and mixed numbers	Order $\frac{1}{2}$, $1\frac{1}{2}$, 2, $\frac{1}{4}$, $1\frac{1}{4}$.	F		62%	64%	-2%
10	Order decimal numbers	Arrange from smallest: 3.6, 3.2, 12.9, 0.5, and 2.3	P	F	87%	89%	-2%
3	Division of two digit number by 3, in word problem	24 seeds in 3 rows. Seeds in each row?	D	E	78%	80%	-2%

National Numeracy Project - June 1998
Year : 6 Cohort: 1

Item Facilities Report							Project - National Difference
Item No.	Written Test	Mathematical content			Project	National	
46	Divide three digit number with one decimal place by two digit number	$128.8 \div 56 = \underline{\quad}$	D		9%	11%	-2%
6	Multiply a two digit number by 4, crossing tens	$72 \times 4 = \underline{\quad}$	M		67%	70%	-2%
2	Estimate to the nearest £5	Ring amount nearest to £5 : £4.50 £5.45 £4.85 £5.10 £4.00	G		69%	72%	-2%
36a	Find perimeter		A	I	20%	23%	-3%
16	Add money	$£31.73 + £57.84 + \underline{\quad}$	A	£	72%	75%	-3%
18	Subtract two digit number from four digit number in a word problem	Write the number ten less than 7004	S		39%	42%	-3%
31	Multiply two digit number by 9 with carrying	$48 \times 9 = \underline{\quad}$	M	X	43%	47%	-4%
35	Addition of three digit numbers with carrying	$256 + 579 = \underline{\quad}$	A	X	73%	76%	-4%
36b	Find area		M	I	13%	17%	-5%
29	Working out for question 29				36%	41%	-5%
14	Find fraction of an amount of money		F		49%	55%	-5%
29	2 step word problem (\div and \times)	3 black bricks and 2 white bricks in	D	M	34%	39%	-5%
17	Subtraction of three digit number crossing tens	$475 - 396$	S	X	55%	60%	-6%
23	Convert centimetres to metres	What is 580cm in metres?	D	L	44%	50%	-6%
20	Subtract money	$£72.47 - £31.60 = \underline{\quad}$	S	£	49%	55%	-6%
25	Divide two digit number by 8 with remainder	$99 \div 8 = \underline{\quad}$	D		34%	41%	-7%
22	Average speed in a word problem	Car travels 120 miles in three hours. Average speed ?	D	T	42%	49%	-7%
28	Divide a four digit number by 9, no remainder	$9729 \div 9 = \underline{\quad}$	D	X	32%	42%	-10%

National Numeracy Project - June 1998
Year : 6 Cohort: 1

Item Facilities Report							Project - National Difference
Item No.	Mental Test	Mathematical content			Project	National	
17	'Square root'	Square root of 81	N		56%	42%	15%
26	Subtract 2 single digit numbers to give a negative number	6 subtract 8	S		53%	41%	13%
15	Writing a fraction as a decimal	Three quarters as a decimal.	F		34%	25%	9%
21	Multiplication of money in a word problem	Meal costs £2.75. Cost of four?	M	£	27%	19%	9%
16	'Multiply' a two digit number by 3, crossing tens	Multiply 48 by 3	M		32%	24%	8%
6	'Product' of two single digit numbers	Product of 7 and 8	M		37%	30%	7%
9	'Divide by forty' with a decimal answer	100 divided by 40	D		19%	13%	6%
29	Squared	What is 13 squared?	N		13%	8%	6%
28	'Write in figures' seven digit number	Write in figures 1,078,046	P		18%	12%	6%
27	Multiplication of 2 two digit numbers	18 multiplied by 25	M		15%	10%	6%
23	'Round' 2 decimal places to one	Round 85.27 to 1 decimal place	?G		16%	10%	6%
19	'Difference between' 2 two digit numbers	Difference between 96 and 72	S		48%	44%	4%
8	'Multiplied by' 6	15 multiplied by 6	M		52%	48%	4%
25	Division of weight in a word problem	Total weight of parcels is 350kg. Each weighs 25kg. How many parcels?	D	K	38%	34%	4%
3	Addition of money in a word problem	CD costs £7.99, tape costs £4.99 Total cost?	A	£	59%	56%	3%
22	'Total' of 2 two digit numbers	Total of 33 and 77	A		58%	55%	3%
10	Sum of two digit and single digit number, crossing tens	Sum of 49 and 7	A		76%	73%	3%
24	'Three tenths of'	What is three tenths of eighty?	F		23%	20%	3%
14	'Share among' 6	Share 84 among 6	D		29%	27%	2%
13	I add to a number and get What is the number?	Add 19 + 84. What is the number	S		40%	37%	2%
11	From a number take away... and get... what is the number	A number subtracted from 43 leaves 24. What is the number?	S		51%	50%	1%
5	'Subtract' using four digit number and three digit number	Subtract 100 from 1000	S		77%	76%	1%
4	'Remainder' when dividing by 6	Remainder when 77 divided by 6	D		38%	37%	1%
12	'Multiplied by' 6	15 multiplied by 6	M		60%	59%	1%
30	33 $\frac{1}{3}$ % of	33 $\frac{1}{3}$ % of 540	%		2%	2%	1%
18	I subtract from a number, and get.... what is the number ?	Subtract 8 and get 27. What's the number ?	A	E	62%	62%	0%
20	96 in eight equal teams. How many in each?	96 children in 8 equal teams. How many in each?	D		43%	43%	0%
7	'Add together' four single digit numbers	Add 7+5+3+9	A		81%	81%	0%
2	'Take away' single digit from tens number	Fourteen take away 7	S		94%	94%	-1%
1	'Add', using single digit numbers, crossing ten	What is 5 add 9?	A		96%	97%	-1%

National Numeracy Project - June 1998

Year : 6

Cohort : 1

Project Level

No. of Round 1 Pupils

6691

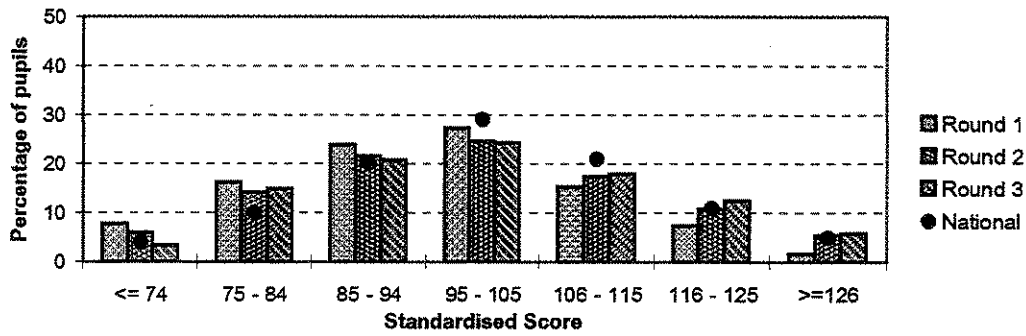
No. of Round 2 Pupils

7030

No. of Round 3 Pupils

7368

Chart 1 : Overall Test Score distribution



The above chart shows the percentage of pupils in the project in the different age-standardised score bands for the third round of testing and compared with the National standardised score distribution. Similar distributions for the written and mental tests are shown below.

Chart 2: Written Test Score distribution

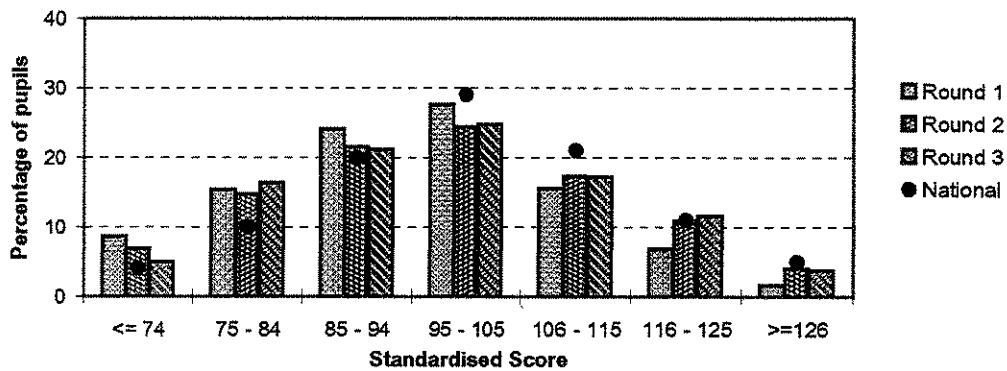
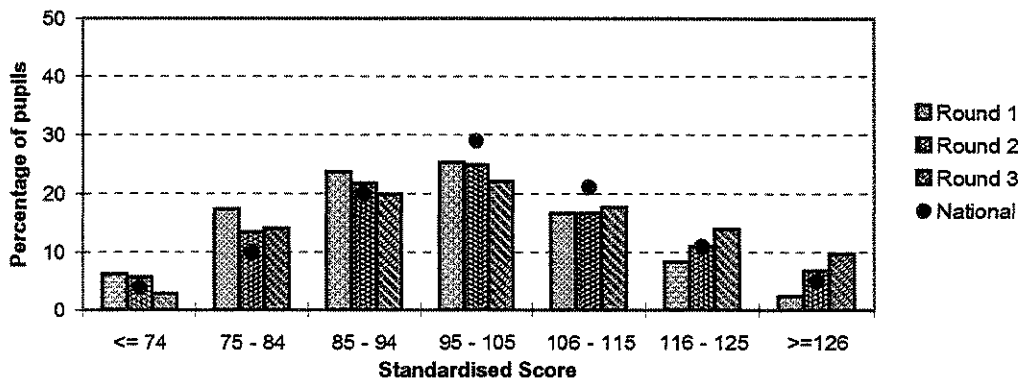


Chart 3 : Mental Test Score distribution



(continued)

National Numeracy Project - June 1998

Year : 6

Cohort : 1

Project Level

No. of Round 1 Pupils

6691

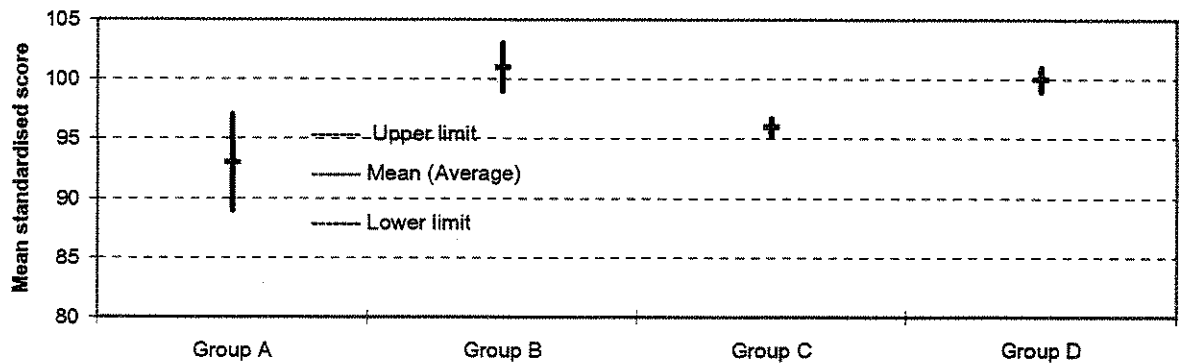
No. of Round 2 Pupils

7030

No. of Round 3 Pupils

7368

Example Chart : Mean scores



The above example shows, for each of four groups, the mean (average) standardised score and an estimate of the "95% confidence band" for each of these mean scores. Such a band means that we can be 95% certain that the mean score lies between the upper and lower limits of the vertical line, as annotated for Group A. If the top of a vertical line is lower than the bottom of another vertical line, then it is likely that there is a real difference between the two groups. If on the other hand the vertical lines overlap, then it is likely that any difference between the two scores is not significant. In this example, the difference between Groups A and B is likely to be real but the difference between Groups B and D is not significant.

Chart 4 : Mean scores for third round of testing

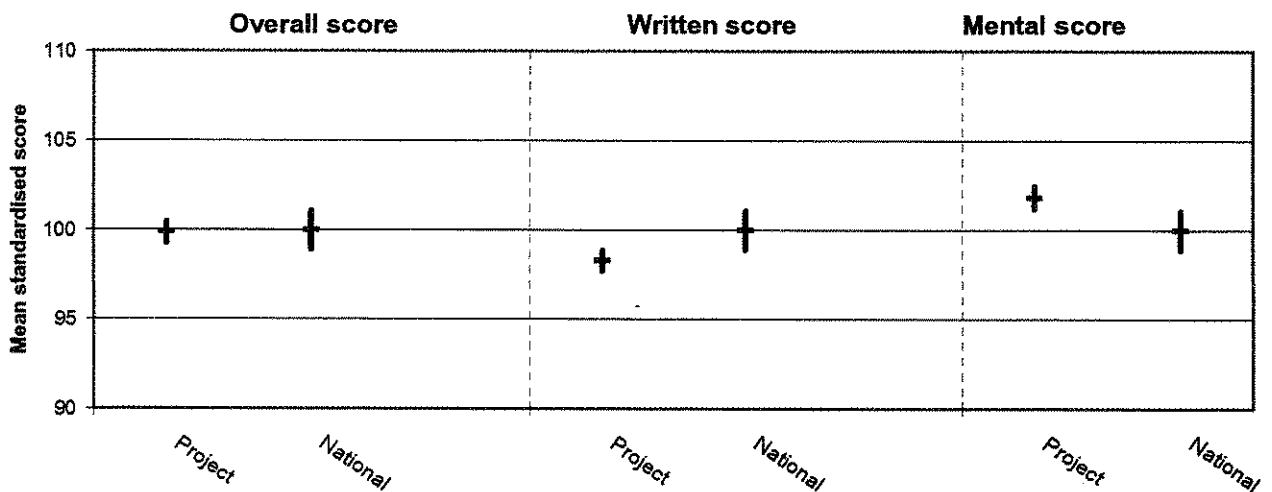


Chart 4 shows the mean (average) score for the Project and compares it with the National Standardisation sample.

(continued)

National Numeracy Project - June 1998

Year : 6

Cohort : 1

Project Level

No. of Round 1 Pupils

6691

No. of Round 2 Pupils

7030

No. of Round 3 Pupils

7368

Chart 5 : Mean project scores for third round of testing

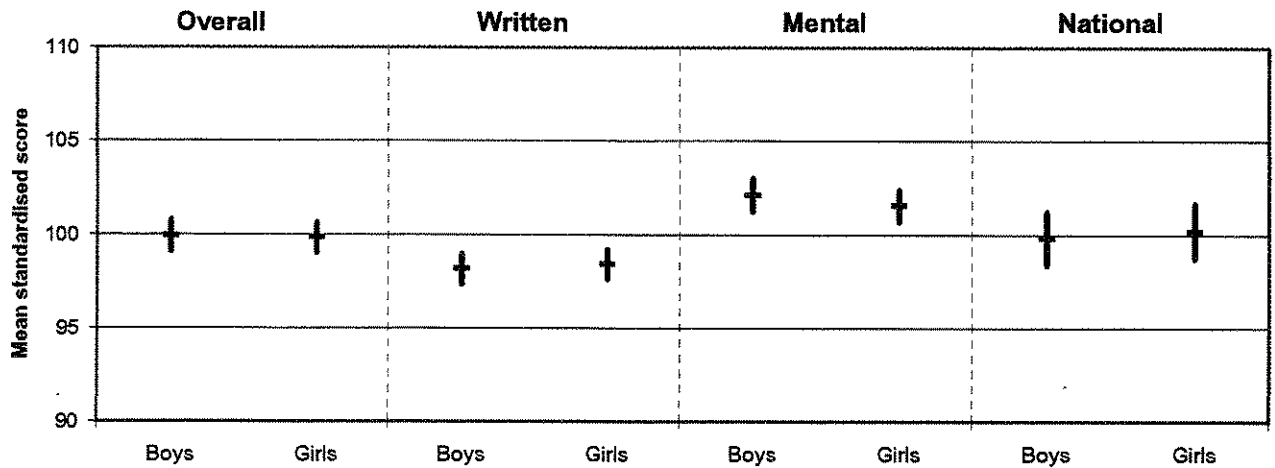


Chart 5 shows the mean (average) score in the project separately for boys and girls and compares it with the National Standardisation sample.

Chart 6 : Mean Standardised scores by term of Birth

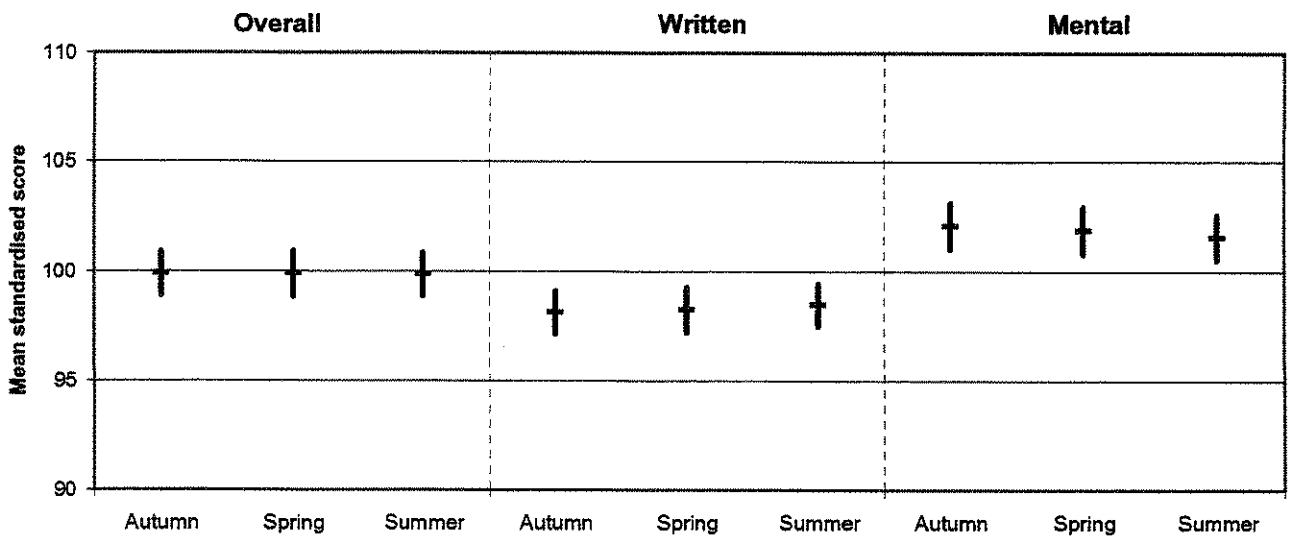


Chart 6 shows the comparison of the mean (average) score of pupils born in the Autumn, Spring and Summer.

(continued)

National Numeracy Project - June 1998

Year : 6

Cohort : 2

Project Level	No. of Round 1 Pupils	6691
	No. of Round 2 Pupils	7030
	No. of Round 3 Pupils	7368

Chart 7 : Mean Progress scores from Round 2 to Round 3

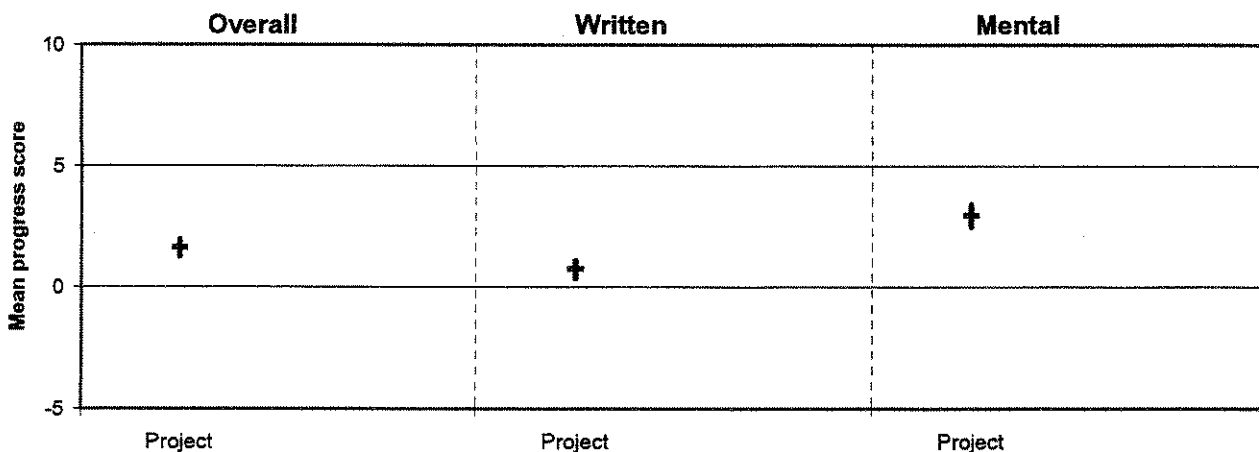
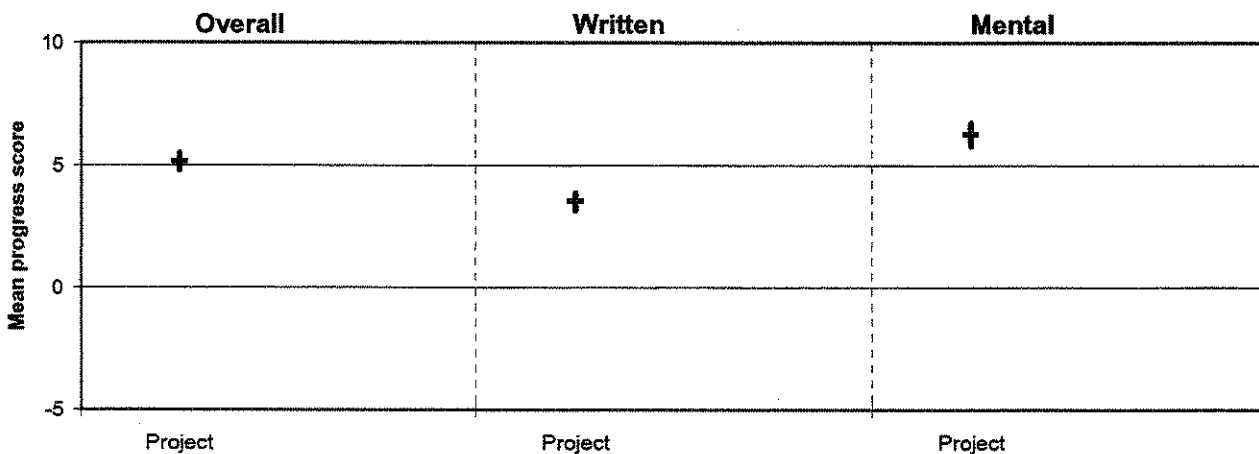


Chart 7 shows the average progress made by the pupils between the second and third rounds of testing. Progress is measured by the difference in the standardised scores between both rounds of testing. The average progress score for your LEA is compared with the pupils in the Project. Any line which lies completely above the horizontal zero line indicates significant progress from Round 2 to Round 3.

Chart 8 below is a similar plot for the progress made from the first to the third rounds of testing, that is the total amount of progress made during the project, in terms of increase in standardised score points over and above what might have been expected due to maturation.

Chart 8 : Mean Progress scores from Round 1 to Round 3



Cohort 2 – Year 2

Contents:

Project Report 1	Standardised scores and progress measures by background data for Project
Project Report 2	Round 2 Standardised scores by LEA
Project Report 3	Progress scores (Round 1-2) by LEA
Item Facilities Report	Comparison of % of correct answers for Project with % from National standardisation sample
Chart 1	Round 2 Overall Test score distribution
Chart 2	Round 2 Written Test Score distribution
Chart 3	Round 2 Mental Test Score distribution
Chart 4	Mean scores for second round of testing
Chart 5	Mean scores for Boys and Girls
Chart 6	Mean scores by term of birth
Chart 7	Mean Progress scores (Round 1 to Round 2)

Project Report 1 - National Numeracy Project - June 1998
Cohort 2 - Year 2 - Mean Standardised Test Scores
Summary by background data- ALL LEAs

	Written Round 2		Mental Round 2		Overall Round 2		Written Progress		Mental Progress		Overall Progress		No. of pupils absent	Total no. of pupils	Percent of pupils
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.			
Total	103.2	15.9	104.1	17.4	104.4	16.1	6.7	11.9	9.0	15.3	7.8	11.3	1814	10135	100%
Gender	Boys	103.4	16.5	104.7	17.9	16.6	7.1	12.0	10.0	15.6	8.5	11.5	904	5175	51%
	Girls	103.0	15.3	103.5	16.8	104.0	15.5	6.2	11.8	14.8	7.1	11.1	906	4956	49%
Ethnic group	Not known	98.0	31.1	112.0	18.7	103.0	29.7						4	4	0%
	White	104.6	15.8	105.9	17.2	106.0	16.0	6.7	11.6	9.3	15.0	11.1	1133	6849	68%
	Black Caribbean	99.5	15.2	101.0	16.9	100.8	15.4	4.8	12.3	6.7	15.0	11.4	91	474	5%
	Black African	101.0	15.4	101.6	17.5	102.0	15.7	4.5	12.1	6.1	16.1	12.1	79	397	4%
	Black Other	104.1	16.8	102.5	18.7	104.6	16.7	8.8	15.2	8.0	16.5	13.4	22	120	1%
	Indian	104.5	15.0	103.3	17.8	105.0	15.2	7.2	11.5	7.5	16.8	11.3	50	353	3%
	Pakistani	96.9	15.4	98.0	16.7	98.0	15.3	7.2	11.6	10.4	15.4	11.0	159	734	7%
	Bangladeshi	99.3	15.1	98.0	16.3	99.5	14.8	7.2	13.5	9.9	15.6	11.8	150	640	6%
	Other	102.3	16.4	102.6	18.0	103.3	16.4	7.3	12.9	8.2	15.9	8.0	111	540	5%
	Not known	96.4	17.7	98.7	18.6	97.8	17.7	11.3	12.6	7.2	22.3	10.3	19	28	0%
Receives Free School Meals?	Yes	98.5	15.6	99.2	17.0	99.5	15.7	6.2	12.3	8.1	15.5	11.5	802	3606	36%
	No	106.0	15.5	107.0	17.1	107.3	15.7	6.9	11.7	9.5	15.1	11.2	936	6262	62%
Special Educational Needs level	Not known	102.0	13.6	102.2	15.4	102.9	13.6	6.6	12.2	8.1	16.7	11.3	76	267	3%
	None	106.7	14.5	107.7	16.1	108.0	14.7	7.3	11.9	9.7	15.2	11.3	1289	7844	77%
	Stage 1	93.8	14.2	94.6	15.6	94.7	14.2	5.4	11.7	7.3	15.4	11.0	207	1142	11%
	Stage 2	89.2	13.4	89.5	14.7	89.9	13.0	3.3	11.9	5.8	15.1	11.1	203	799	8%
	Stage 3	84.9	15.4	85.9	15.8	86.0	14.6	2.8	10.6	5.4	15.4	10.4	54	187	2%
	Stage 4 or above	81.8	14.7	81.2	15.6	82.4	14.5	-4	9.0	0	11.1	8.0	44	115	1%
	Not known	103.9	14.5	105.4	16.0	105.2	14.9	2.5	10.9	8.5	10.5	10.2	17	48	0%
Stage of Learning English	New to English	94.4	16.0	91.8	16.0	94.2	14.9	7.9	14.4	8.4	16.0	12.0	87	309	3%
	Becoming familiar with English	95.4	15.0	95.1	16.0	95.9	14.7	6.3	12.6	7.9	16.0	11.7	177	861	8%
	Becoming confident with English	101.4	14.4	101.9	16.9	102.4	14.6	6.6	11.9	9.1	16.5	11.7	167	748	7%
	Very fluent in most contexts	106.6	15.2	107.8	16.3	108.0	15.2	7.2	12.4	9.9	16.1	12.1	100	457	5%
English first language	English first language	104.4	15.8	105.6	17.2	105.8	16.0	6.6	11.7	9.1	15.0	11.2	1266	7727	76%
	Not known	95.2	15.0	97.7	18.7	96.9	16.1	2.8	11.6	4.7	15.5	12.0	17	33	0%

* Number of pupils absent from either rounds of testing

Project Report 1 - National Numeracy Project - June 1998
Cohort 2 - Year 2 - Mean Standardised Test Scores
Summary by background data- ALL LEAs

	Written Round 2		Mental Round 2		Overall Round 2		Written Progress		Mental Progress		Overall Progress		No. of pupils absent	Total no. of pupils	Percent of pupils
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.			
Received Nursery Education?	103.6	15.9	104.4	17.3	104.8	16.0	6.3	12.0	8.8	15.2	7.5	11.4	868	6383	63%
	103.4	16.0	104.8	17.7	104.9	16.3	7.4	11.3	10.0	14.8	8.6	10.9	340	2067	20%
	101.5	15.8	102.2	17.3	102.6	15.9	7.3	12.2	8.3	16.3	8.0	11.8	606	1685	17%
4 terms or less	96.8	16.2	97.4	17.6	97.8	16.3	10.4	13.5	8.7	15.3	10.4	12.9	529	587	6%
5	102.2	16.4	101.2	18.7	102.7	16.6	10.1	12.3	8.1	16.3	9.7	11.7	59	262	3%
6	102.9	15.2	103.1	17.4	103.9	15.5	7.1	12.9	9.0	15.7	8.1	11.7	107	828	8%
7	103.4	15.6	103.8	17.5	104.5	15.9	6.3	12.2	9.2	15.7	7.7	11.8	204	1941	19%
8	104.1	15.8	105.4	17.1	105.4	16.0	6.6	11.6	9.0	15.1	7.8	11.1	654	5818	57%
9	104.1	17.5	104.9	18.6	105.3	17.6	5.4	12.1	10.1	14.8	7.3	11.5	31	187	2%
10	104.0	15.3	98.4	15.8	102.8	14.9	6.6	12.8	9.2	17.4	8.0	12.9	5	26	0%
11	103.8	15.0	100.5	16.8	103.3	15.1	4.6	10.8	6.0	11.5	5.6	9.4	8	50	0%
12	99.5	9.4	90.9	11.1	96.7	9.1	5.2	8.3	3.8	9.7	5.3	8.4	14	18	0%
Not known	100.0	16.2	101.3	17.6	101.3	16.3	6.9	11.9	8.3	15.5	7.7	11.2	203	418	4%
	100.7	16.6	100.4	18.1	101.5	16.4	5.7	12.9	6.3	17.0	6.2	12.2	335	1221	12%
KS1 Teacher Assessment level- Number	85.4	9.7	86.6	10.9	86.2	8.8	7	10.3	4.0	13.6	1.7	9.2	357	1507	15%
1	104.5	11.9	105.4	14.3	105.7	12.2	7.7	11.7	9.7	15.1	8.9	11.0	913	5728	57%
2	121.8	8.6	123.2	9.3	123.7	8.0	9.6	11.5	13.3	14.4	11.3	11.1	135	1465	14%
3	75.8	7.9	77.6	9.9	77.2	7.2	-2.6	9.1	1.6	14.0	-1.2	8.4	74	214	2%
W	98.5	17.6	98.4	19.5	99.3	18.0	5.5	12.1	7.4	17.5	6.5	12.1	252	592	6%
1	85.4	9.9	86.6	11.2	86.2	9.1	2	10.4	3.5	14.1	1.2	9.4	331	1443	14%
2	101.5	14.2	100.5	15.1	102.0	13.5	-7.0	13.6	-7.7	17.6	-7.3	13.3	10	61	1%
2A	112.3	9.6	113.9	12.2	114.1	9.7	10.0	11.7	13.0	15.0	11.7	10.9	207	1558	15%
2B	105.0	10.1	106.1	12.7	106.3	10.3	8.2	11.5	10.0	14.9	9.3	10.9	356	2199	22%
2C	96.2	10.3	96.7	12.6	96.9	10.1	5.2	11.0	6.9	14.5	6.1	10.2	408	2314	23%
3	121.6	8.8	122.5	10.4	123.3	8.3	10.0	11.8	12.8	14.7	11.4	11.4	178	1721	17%
W	76.9	8.8	77.7	9.0	77.9	7.6	-1.9	9.9	.5	14.0	-1.2	8.5	72	247	2%

* Number of pupils absent from either rounds of testing

Project Report 2 - National Numeracy Project - June 1998
Cohort 2 - Round 2 - Mean Standardised Test Scores
Summary by LEA

Year Group: 2

		Written		Mental		Overall		No. of pupils absent	Total no. of pupils
		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.		
		Total	103.2	15.9	104.1	17.4	104.4		
LEA	1	104.1	16.1	104.8	18.1	105.2	16.4	24	750
	2	109.2	14.6	111.3	15.5	111.0	14.6	22	596
	3	108.1	14.8	110.1	15.1	109.8	14.6	16	329
	4	103.9	15.5	105.8	16.9	105.5	15.9	57	837
	5	103.0	15.4	103.3	16.7	103.9	15.4	62	1064
	6	102.7	16.7	103.8	18.1	104.1	16.5	46	811
	7	98.8	15.0	100.9	18.2	100.6	15.7	29	317
	8	103.2	16.1	104.8	17.6	104.8	16.4	30	597
	9	103.0	15.8	104.8	16.9	104.5	16.0	48	1061
	10	102.9	15.6	101.2	16.7	103.0	15.6	30	672
	12	100.5	16.3	101.2	17.8	101.6	16.4	70	1180
	13	101.6	15.6	101.5	17.0	102.4	15.6	40	809
	14	103.2	16.4	104.1	18.0	104.5	16.7	24	670
	15	104.1	15.3	104.9	17.2	105.2	15.7	25	442

**Project Report 3 - National Numeracy Project - June 1998
Cohort 2 - Round 2 - Mean Progress Standardised Test Scores
Summary by LEA**

Year Group: 2

	Written Progress Score		Mental Progress Score		Overall Progress Score		No. of pupils absent	Total no. of pupils	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.			
Total	6.7	11.9	9.0	15.3	7.8	11.3	1814	10135	
LEA	1	5.4	12.4	7.5	14.9	6.5	11.6	115	750
	2	6.5	10.6	8.4	14.8	7.4	10.5	91	596
	3	6.1	10.8	10.3	14.4	7.9	10.0	62	329
	4	6.9	11.8	10.7	15.2	8.6	11.7	135	837
	5	7.5	11.0	8.7	15.1	8.1	10.4	194	1064
	6	5.1	13.1	6.9	17.2	6.0	12.5	165	811
	7	9.1	11.6	10.2	14.7	10.1	10.8	81	317
	8	8.4	10.9	11.4	13.4	10.1	10.5	99	597
	9	5.3	11.2	8.2	15.7	6.7	11.3	180	1061
	10	7.4	13.7	10.7	15.3	8.9	12.1	122	672
	12	7.4	12.2	8.9	15.6	8.3	11.5	238	1180
	13	5.6	12.9	6.0	15.4	6.1	12.0	149	809
	14	7.5	11.5	11.4	14.5	9.3	10.7	110	670
	15	6.5	11.1	9.9	14.0	8.2	10.4	73	442

National Numeracy Project - June 1998

Year : 2

Cohort: 2

Item Facilities Report

Item No.	Written Test	Mathematical content			Project	National	Project - National Difference
17	Doubling	Double 8	M		63%	40%	23%
36	Round to the nearest hundred	357 to the nearest hundred	G		26%	12%	14%
14	'Odd number' recognition	Ring odd numbers in range 18 to 25	N		68%	54%	13%
34	Place value	Ring hundreds in 1295	P		27%	14%	13%
22	Read a scale (whole numbers)	Scale numbered in 5s from 0 to 25, read 17	R		43%	31%	12%
19		30 - _ = 22	S	B	48%	38%	10%
23		43 - _ = 37	S	B	41%	31%	10%
13	Subtract single digit from two digit number without crossing tens	87 - 4 = _	S	X	59%	49%	9%
11		_ + _ = 28	A	O	72%	63%	9%
24	Number sequence - add 7	Next number in sequence 14, 21, 28, 35, _	N		31%	23%	9%
28		20 x _ = 80	M	B	17%	8%	9%
9	Add 10 to a two digit number	83 + 10 = _	A	X	71%	63%	9%
29		46 ÷ _ = 23	D	B	14%	6%	8%
20	Add a single to a two digit number, crossing tens	54 + 9 = _	A	X	63%	56%	8%
21	Fraction recognition	Recognise a shaded quarter of a circle	F		33%	26%	7%
30a	Total weight, data handling, read table	Total weight of three children (in kg)	A	H	17%	10%	6%
27		_ - 9 = 7	S	B	21%	15%	6%
7	Subtract single digit numbers	8 - 3 = _	S	X	84%	78%	6%
25	Multiply two digit number by 3, no carrying	32 x 3 = _	M	X	16%	10%	6%
10	Add a single digit to a teens number, not crossing 20	12 + 7 = _	A	X	79%	73%	6%
30b	Subtract heights, data handling, read table	How much taller? (Heights in cm)	S	H	17%	12%	5%
26	Multiply by 6 (square numbers - table fact)	6 x 6 = _	M	X	25%	20%	5%
15	Addition of weight	50g and 5g. How many grams altogether?	A	K	55%	50%	5%
18	Addition of time (hours)	Read 10:30 on a digital clock. Time is one hour later?	A	T	39%	35%	5%
16	Add 3 single digit numbers	5 + 2 + 9 = _	A	X	76%	71%	5%
12	Add numbers less than 20, in a word problem	7 people on a bus. 8 more get on. How many now?	A	E	69%	65%	4%
31	Subtract 3 digit number from 200	200 - 184 = _	S	X	9%	6%	4%
37	Divide three digit by two digit number, in a word problem	How many 25s in 450?	D	E	4%	2%	3%
33	Convert centimetres to millimetres	Millimetres in 11 centimetres	M	L	5%	3%	2%
2	Number line with numbers less than 10 (decreasing)	Fill in missing numbers on number line from 9 to 4	N		91%	89%	2%
4	Add single digit numbers	3 + 6 = _	A	X	92%	90%	2%
32	Divide 2 digit number by 3, with remainder	67 ÷ 3 = _	D	X	2%	1%	1%
3	Counting with numbers less than 20	Count 12 birds	C		94%	93%	1%
35	Volume of rectangular block	Count cubes. 2cm x 3cm x 4cm.	V		5%	4%	1%
5	Add 5p, 2p and 1p coins	2p + 5p + 1p + 1p = _	A	£	86%	85%	1%
8	Multiplication in a word problem	3 x 4 = _	M	E	58%	57%	1%

National Numeracy Project - June 1998							
Year : 2				Cohort: 2			

Item Facilities Report							Project - National
1	Counting two groups, total less than 10	4 dogs and 5 cats. How many animals altogether?	A	E	98%	97%	1%
6	Comparing heights	Draw a ring around the shortest person	L		92%	92%	0%

National Numeracy Project - June 1998

Year : 2

Cohort: 2

Item Facilities Report

Item No.	Mental Test	Mathematical content			Project	National	Project - National Difference
16	'Write to the nearest ten', -rounding to nearest ten	Write 93 to the nearest ten	G		30%	12%	18%
6	'Altogether' in word problem, multiples of 100	Paula runs 200 metres and then another 300 metres. How far does she run altogether?	A	L	55%	40%	15%
8	'Take' single digit from two digit number	Take 6 from 18	S		44%	30%	14%
11	'Write two numbers which add up to...'	Write two numbers which add up to 14	A	O	63%	49%	13%
14	'Divide by', 2	Divide 16 by 2	D		24%	12%	12%
4	'Times', 2 and 5	2 times 5	M		59%	47%	12%
12	'Write in figures', three digit number	Write in figures the number 506	P		46%	34%	12%
18	'Difference between', teens and single digit number	Difference between 16 and 7	S		24%	13%	11%
15	'Subtract', 30 from two digit number	56 subtract 30	S		19%	10%	9%
5	'How many altogether?', two digit number and 10	How many are 39 and 10 altogether	A		56%	47%	9%
3	Addition of money, in a word problem	Mark has a 20 pence coin. Vijay gives him 6p. How much has he now?	A	£	70%	61%	8%
13	'I am thinking of a number', two digit numbers	I subtract 20. Answer is 70. What number did I start with?	S	B	17%	9%	8%
7	'Share equally among', in a word problem	60p is shared equally among 6 children. How much each?	D	£	42%	34%	8%
19	'Add', two digit numbers, crossing tens	28 add 43	A		13%	6%	8%
9	Addition of time (hours) in a word problem	Clock says four o'clock. Time in 3 hours?	A	T	50%	43%	7%
10	'Take away', 10 from teens number	What number taken away from 16 leaves 10?	S		49%	42%	7%
17	Multiply money, in a word problem	One toy costs £1.50. How much do three cost?	M	£	13%	7%	6%
2	'Add', using 3 single digit numbers	5 add 3 add 2	A		81%	76%	5%
1	'Take away', using single digit numbers	7 take away 5	S		80%	75%	5%

National Numeracy Project - June 1998

Year : 2

Cohort : 2

Project Level

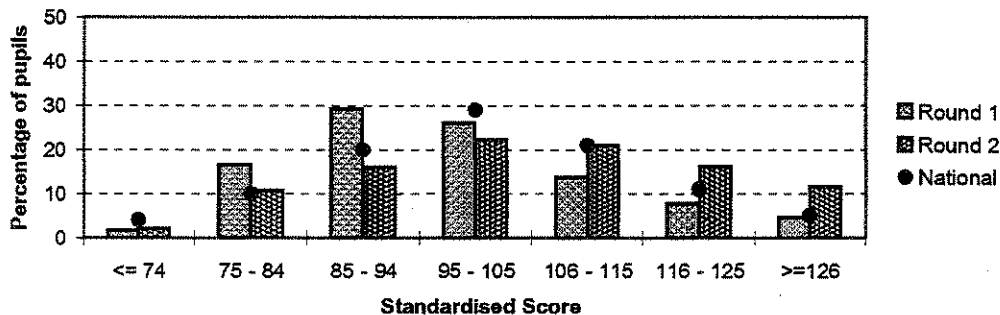
No. of Round 1 Pupils

8336

No. of Round 2 Pupils

9570

Chart 1 : Overall Test Score distribution



The above chart shows the percentage of pupils in the project in the different age-standardised score bands for the first and second round of testing and compared with the National standardised score distribution. Similar distributions for the written and mental tests are shown below.

Chart 2: Written Test Score distribution

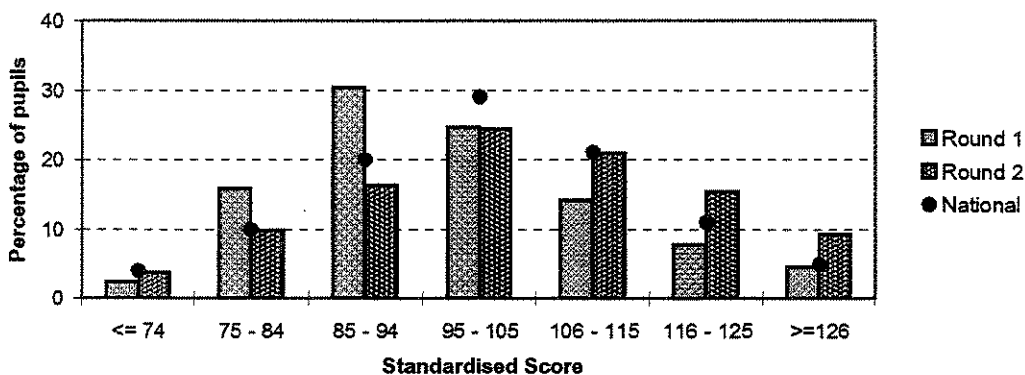
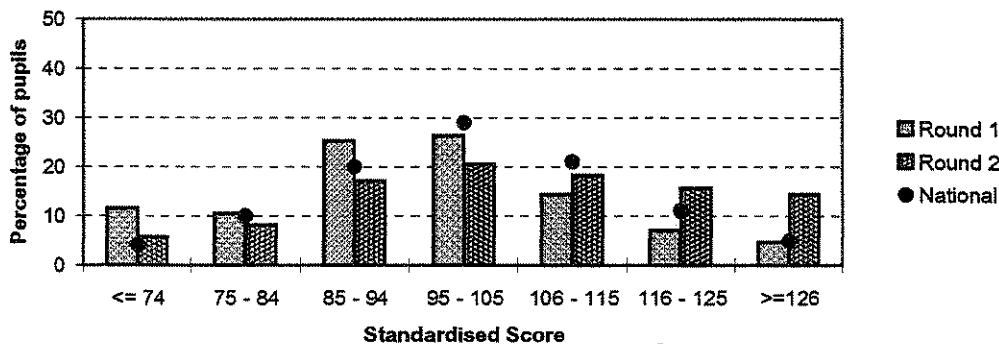


Chart 3 : Mental Test Score distribution



(continued)

National Numeracy Project - June 1998

Year : 2

Cohort : 2

Project Level

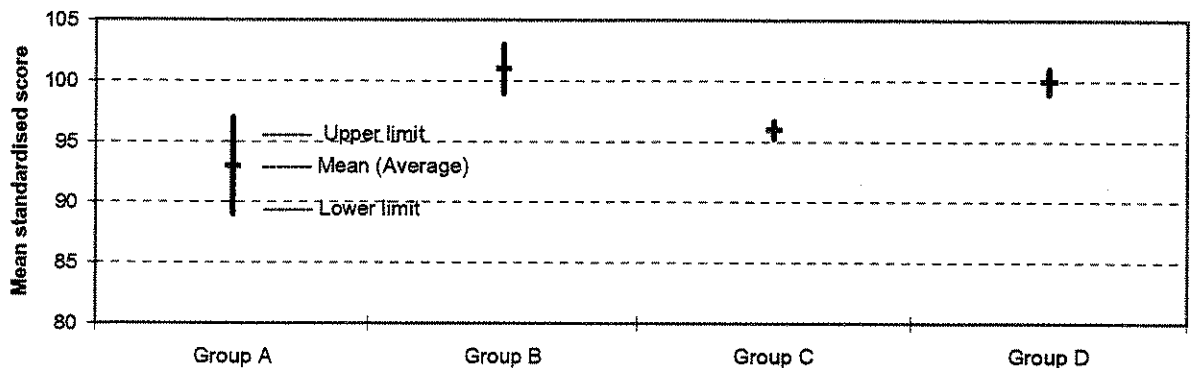
No. of Round 1 Pupils

8336

No. of Round 2 Pupils

9570

Example Chart : Mean scores



The above example shows, for each of four groups, the mean (average) standardised score and an estimate of the "95% confidence band" for each of these mean scores. Such a band means that we can be 95% certain that the mean score lies between the upper and lower limits of the vertical line, as annotated for Group A. If the top of a vertical line is lower than the bottom of another vertical line, then it is likely that there is a real difference between the two groups. If on the other hand the vertical lines overlap, then it is likely that any difference between the two scores is not significant. In this example, the difference between Groups A and B is likely to be real but the difference between Groups B and D is not significant.

Chart 4 : Mean scores for second round of testing

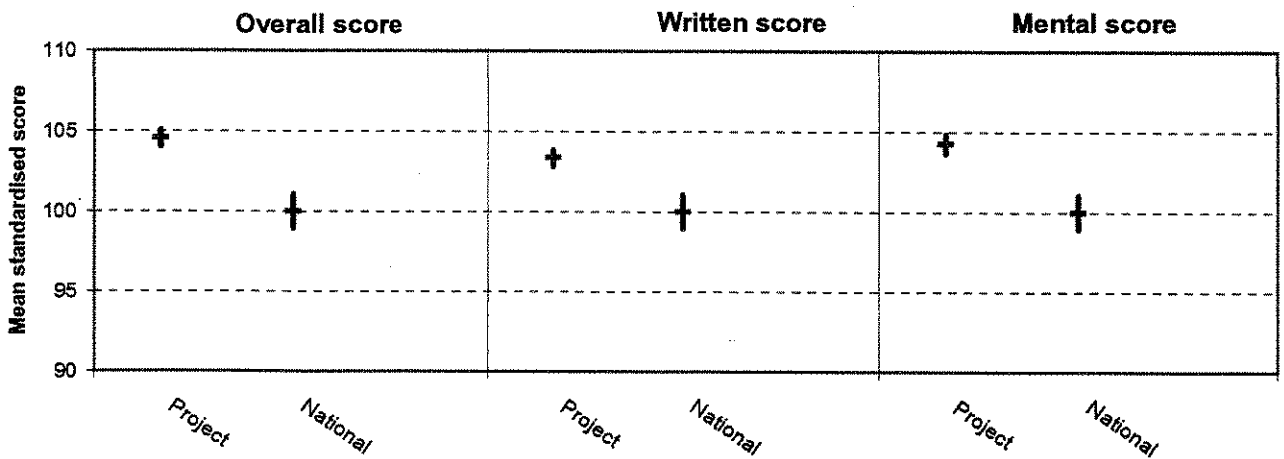


Chart 4 shows the mean (average) score for the project as a whole and compares it with the National Standardisation sample.

(continued)

National Numeracy Project - June 1998

Year : 2

Cohort : 2

Project Level

No. of Round 1 Pupils

8336

No. of Round 2 Pupils

9570

Chart 5 : Mean project scores for second round of testing

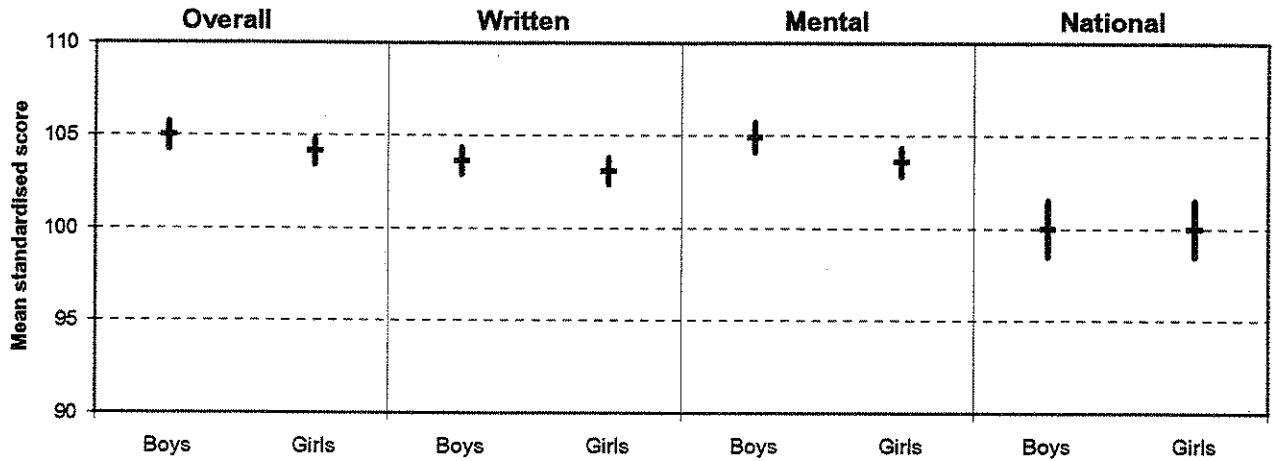


Chart 5 shows the mean (average) score in the project separately for boys and girls and compares it with the National Standardisation sample.

Chart 6 : Mean Standardised scores by term of Birth

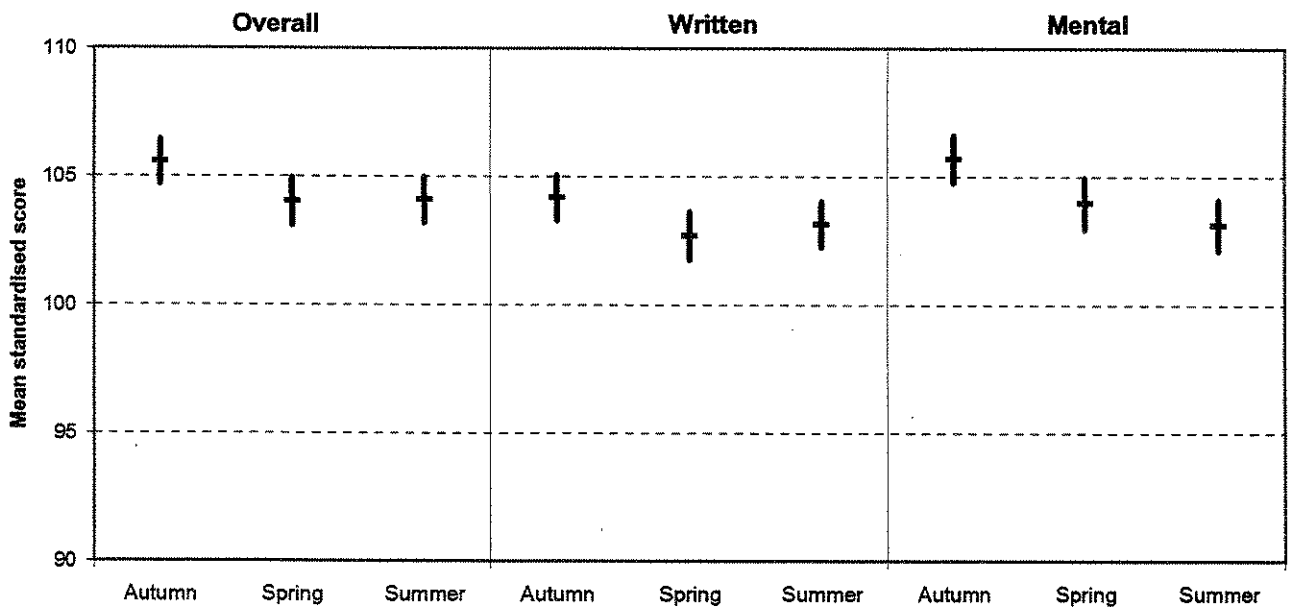


Chart 6 shows the comparison of the mean (average) score of pupils born in the Autumn, Spring and Summer.

(continued)

National Numeracy Project - June 1998

Year : 2

Cohort : 2

Project Level

No. of Round 1 Pupils

8336

No. of Round 2 Pupils

9570

Chart 7 : Mean Progress scores

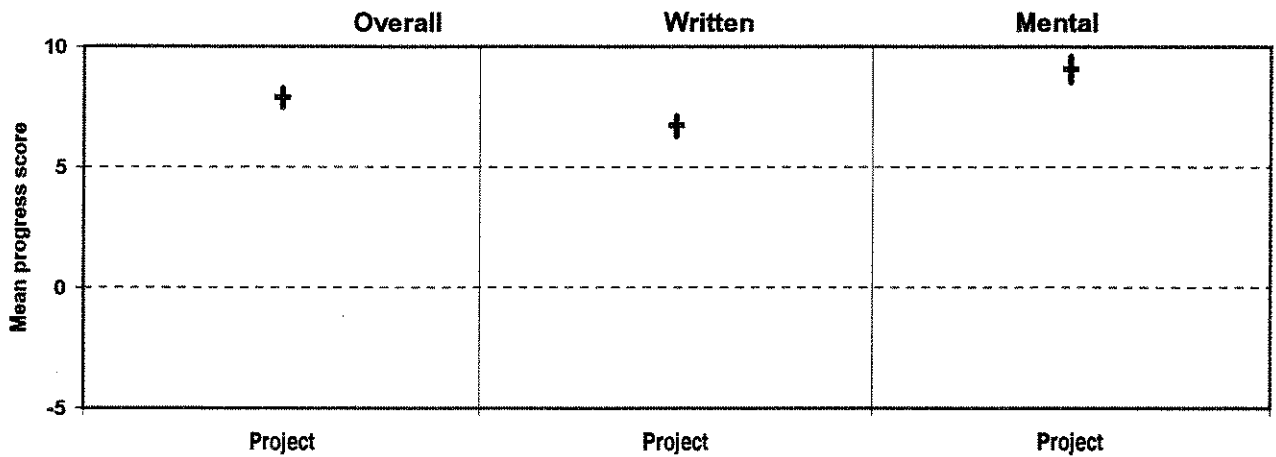


Chart 7 shows the average progress made by the pupils between the first and second rounds of testing. Progress is measured by the difference in the standardised scores between both rounds of testing. Any line which lies completely above the horizontal zero line indicates significant progress from Round 1 to Round 2.

Cohort 2 – Year 3

Contents:

Project Report 1	Standardised scores and progress measures by background data for Project
Project Report 2	Round 2 Standardised scores by LEA
Project Report 3	Progress scores (Round 1-2) by LEA
Item Facilities Report	Comparison of % of correct answers for Project with % from National standardisation sample
Chart 1	Round 2 Overall Test score distribution
Chart 2	Round 2 Written Test Score distribution
Chart 3	Round 2 Mental Test Score distribution
Chart 4	Mean scores for second round of testing
Chart 5	Mean scores for Boys and Girls
Chart 6	Mean scores by term of birth
Chart 7	Mean Progress scores (Round 1 to Round 2)

Project Report 1 - National Numeracy Project - June 1998
Cohort 2 - Year 3 - Mean Standardised Test Scores
Summary by background data- ALL LEAs

	Written Round 2			Mental Round 2			Overall Round 2			Written Progress			Mental Progress			Overall Progress			No. of pupils absent	Total no. of pupils	Percent of pupils
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.			
Total	101.9	16.0	102.2	16.1	102.4	15.9	4.3	10.3	4.6	13.2	4.2	9.8	2205	9986	100%						
Gender																					
Boys	102.5	16.5	102.8	16.7	103.0	16.4	4.9	10.3	4.6	13.4	4.5	9.8	1119	5023	50%						
Girls	101.4	15.4	101.6	15.4	101.9	15.3	3.8	10.3	4.5	13.0	3.8	9.7	1084	4961	50%						
Not known	101.0		99.0		101.0								2	2	0%						
Ethnic group																					
White	103.4	15.8	103.7	15.7	104.0	15.7	4.1	10.3	4.1	12.8	3.9	9.6	1283	6502	65%						
Black Caribbean	97.5	15.3	98.9	16.0	98.3	15.3	3.6	10.9	5.1	14.4	3.8	10.1	85	531	5%						
Black African	100.4	16.3	101.2	16.7	101.1	16.3	5.4	9.5	5.0	13.7	5.0	9.5	86	391	4%						
Black Other	97.9	14.2	97.6	16.8	98.0	15.1	3.5	10.0	.8	14.9	2.0	10.2	21	108	1%						
Indian	103.7	15.8	104.1	15.8	104.3	15.7	3.8	10.5	4.5	13.8	3.9	10.0	60	371	4%						
Pakistani	96.0	15.2	96.2	15.8	96.2	15.2	5.6	10.1	6.0	12.7	5.3	9.5	198	784	8%						
Bangladeshi	98.7	15.3	98.2	16.1	98.8	15.4	5.7	11.1	7.6	15.5	6.1	10.7	302	687	7%						
Other	100.1	16.9	100.0	16.9	100.4	16.7	4.7	10.7	5.7	13.6	4.9	10.2	159	590	6%						
Not known	99.7	12.3	97.0	18.2	99.0	13.0	6.7	8.6	7.2	15.0	6.4	8.9	11	22	0%						
Receives Free School Meals?																					
Yes	97.2	15.3	97.9	16.0	97.7	15.5	4.5	10.4	5.2	13.3	4.5	9.7	1048	3673	37%						
No	104.7	15.7	104.8	15.5	105.2	15.5	4.3	10.3	4.2	13.1	4.0	9.8	1070	6103	61%						
Not known	98.3	16.4	99.6	16.7	99.0	16.5	3.6	9.3	5.0	13.1	3.6	8.4	87	210	2%						
None	106.0	14.5	106.1	14.7	106.6	14.4	4.6	10.5	4.8	13.3	4.5	10.0	1570	7499	75%						
Special Educational Needs level																					
Stage 1	92.3	13.2	94.0	14.1	93.0	13.1	4.0	10.6	5.1	13.4	4.0	9.7	212	1008	10%						
Stage 2	87.7	11.9	88.8	12.6	87.9	11.7	3.1	9.3	3.3	12.9	2.6	8.5	248	945	9%						
Stage 3	84.2	12.7	85.3	14.3	84.5	12.9	2.4	8.7	2.4	11.1	1.6	7.9	102	321	3%						
Stage 4 or above	82.8	16.1	80.3	13.5	81.7	14.9	3.0	9.3	-1	10.2	.9	7.7	49	147	1%						
Not known	101.7	15.6	99.9	15.4	101.3	15.4	4.2	5.9	9.8	10.0	5.7	5.6	24	66	1%						
0	98.0		107.0		101.0								1	1	0%						
New to English	87.0	13.3	86.9	14.4	86.8	13.2	3.6	8.5	4.3	14.7	2.8	8.6	112	195	2%						
Becoming familiar with English	92.8	14.8	92.5	15.2	92.7	14.7	4.4	10.8	4.7	13.7	4.0	10.3	228	717	7%						
Becoming confident with English	100.1	15.3	100.7	15.8	100.7	15.3	5.7	10.6	6.1	14.1	5.6	10.3	285	941	9%						
Very fluent in most contexts	104.4	14.4	104.2	14.8	104.8	14.2	5.9	10.2	7.0	13.6	6.2	9.5	119	660	7%						
English first language	103.0	15.9	103.4	15.8	103.6	15.8	4.1	10.3	4.2	13.0	3.9	9.7	1442	7441	75%						
Not known	96.3	15.3	94.3	17.0	95.7	15.3	-2	14.3	2.0	12.6	.3	10.2	18	31	0%						

* Number of pupils absent from either rounds of testing

Project Report 1 - National Numeracy Project - June 1998
Cohort 2 - Year 3 - Mean Standardised Test Scores
Summary by background data- ALL LEAs

	Written Round 2		Mental Round 2		Overall Round 2		Written Progress		Mental Progress		Overall Progress		No. of pupils absent	Total no. of pupils	Percent of pupils
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.			
4 terms or less	100.1	16.5	100.6	17.0	100.5	16.3	6.7	10.8	6.2	13.6	6.0	9.7	29	81	1%
5	102.2	16.6	100.7	15.9	102.0	15.8	7.8	8.4	4.3	15.7	6.1	7.9	14	83	1%
6	97.5	18.2	97.1	19.3	97.5	18.8	3.5	8.0	3.5	13.3	2.7	8.0	12	52	1%
7	96.1	14.3	94.9	14.3	95.6	14.0	7.5	10.8	3.5	14.0	5.6	10.0	22	70	1%
8	101.5	16.2	101.6	17.1	102.0	16.5	3.7	11.1	5.4	14.5	3.9	10.6	51	362	4%
9	101.5	15.6	101.8	15.8	101.9	15.4	4.0	10.5	4.7	13.6	4.0	10.0	125	848	8%
10	102.5	15.9	102.7	16.0	103.0	15.8	4.5	9.6	4.4	13.2	4.2	9.3	295	1808	18%
11	103.3	15.7	103.5	15.7	103.8	15.6	4.1	10.5	4.1	12.8	3.9	9.8	740	5168	52%
12	100.4	15.7	101.9	15.6	101.3	15.6	5.5	10.3	8.0	13.9	6.2	10.2	29	352	4%
Not known	96.4	15.9	97.2	16.4	96.9	16.0	5.4	10.4	7.7	14.8	5.9	10.1	888	1162	12%
	99.2	16.1	99.9	16.6	99.8	16.2	6.4	9.9	8.0	12.5	6.8	9.2	798	1547	15%
1	86.8	10.8	88.2	11.8	87.1	10.5	3.7	9.8	4.0	12.7	3.2	8.9	320	1719	17%
2	104.4	13.0	104.7	13.3	105.0	12.8	4.6	10.7	4.9	13.4	4.5	10.1	867	5373	54%
3	119.6	10.2	118.3	11.3	120.1	10.0	2.9	9.8	2.1	13.4	2.4	9.6	177	1159	12%
W	77.6	7.3	77.7	10.2	77.3	7.6	2.8	6.8	-4	10.2	.7	6.6	43	188	2%
	99.5	16.4	100.0	16.8	100.0	16.5	4.5	10.8	6.3	13.1	4.9	10.1	793	1572	16%
1	85.7	10.0	87.2	11.4	86.0	9.8	3.7	9.3	4.2	12.4	3.3	8.5	281	1468	15%
2	100.7	13.0	97.7	11.2	99.8	11.4	.6	13.9	-4.8	12.1	-1.8	10.2	23	84	1%
2A	110.4	11.1	110.2	11.7	111.1	10.9	5.0	10.7	4.9	13.2	4.9	10.1	301	1840	18%
2B	102.9	11.4	103.5	12.3	103.6	11.1	5.1	10.8	5.8	13.7	5.3	10.3	257	1583	16%
2C	95.8	11.1	97.1	12.2	96.4	11.0	4.6	10.5	6.1	13.1	4.9	9.7	285	1789	18%
3	119.2	10.5	117.5	11.6	119.5	10.2	3.1	9.8	1.3	13.2	2.1	9.4	233	1474	15%
W	77.8	7.9	78.2	10.3	77.6	7.9	3.5	7.3	.6	10.3	1.5	6.5	32	176	2%

* Number of pupils absent from either rounds of testing

Project Report 2 - National Numeracy Project - June 1998
Cohort 2 - Round 2 - Mean Standardised Test Scores
Summary by LEA

Year Group: 3

		Written		Mental		Overall		No. of pupils absent	Total no. of pupils
		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.		
Total		101.9	16.0	102.2	16.1	102.4	15.9	1097	9986
LEA	1	101.4	16.1	101.7	16.6	101.9	16.2	27	759
	2	105.5	15.0	106.7	14.5	106.4	14.6	42	587
	3	107.2	15.3	107.2	15.0	107.8	15.1	12	321
	4	103.9	15.7	103.9	16.0	104.3	15.8	45	811
	5	101.5	16.0	102.1	15.3	102.1	15.7	42	1014
	6	100.8	16.6	101.3	17.3	101.5	16.6	46	784
	7	99.4	15.7	100.1	15.8	100.0	15.6	8	286
	8	100.8	16.0	100.9	15.4	101.2	15.6	22	550
	9	104.6	15.0	104.7	15.0	105.1	14.9	46	923
	10	99.4	15.3	99.2	15.7	99.6	15.3	263	682
	12	98.6	15.8	98.9	16.2	99.0	15.8	302	1407
	13	101.0	16.7	100.9	16.9	101.4	16.6	125	811
	14	101.2	15.1	102.6	15.6	102.1	15.2	98	644
	15	105.3	16.4	103.9	16.2	105.3	16.3	19	407

**Project Report 3 - National Numeracy Project - June 1998
Cohort 2 - Round 2 - Mean Progress Standardised Test Scores
Summary by LEA**

Year Group: 3

	Written Progress Score		Mental Progress Score		Overall Progress Score		No. of pupils absent	Total no. of pupils	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.			
Total	4.3	10.3	4.6	13.2	4.2	9.8	2205	9986	
LEA	1	3.4	10.4	4.5	14.7	3.6	10.6	112	759
	2	1.5	10.6	2.3	13.2	1.5	9.7	100	587
	3	3.4	9.7	1.9	12.8	2.6	9.3	57	321
	4	5.2	10.5	5.7	12.5	5.2	9.7	130	811
	5	2.9	10.4	2.6	11.7	2.5	9.5	127	1014
	6	5.7	10.9	5.3	14.3	5.3	10.1	162	784
	7	4.7	9.2	5.7	13.0	4.8	8.8	56	286
	8	3.3	9.4	2.2	12.8	2.6	9.0	71	550
	9	5.0	10.3	4.8	13.0	4.7	9.7	152	923
	10	3.2	11.3	6.4	15.7	4.0	10.8	325	682
	12	6.0	10.0	6.4	12.3	5.7	9.2	456	1407
	13	3.3	11.2	3.0	13.9	2.9	10.6	232	811
	14	5.6	8.7	7.7	11.6	6.2	8.2	162	644
	15	6.7	9.9	5.0	12.8	5.9	9.2	63	407

National Numeracy Project - June 1998

Year : 3

Cohort: 2

Item Facilities Report							Project - National Difference	
Item No.	Written Test	Mathematical content			Project	National		
22	Round three-digit number to nearest 100	Write 357 to nearest 100	G		51%	33%	18%	
8	Subtract 10 from a two digit number	10 less than 78	S		64%	53%	11%	
16	Doubling	Double 60	M		54%	44%	10%	
31	Numbers divisible by 5 with no remainder	Ring two multiples of 5: 8 36 15 53 11 40	N		39%	31%	8%	
28	Find the difference between a positive and a negative number in the context of a fall in temperature	Find difference between 5° and -4°	S	E	19%	11%	8%	
14	Fraction recognition (one quarter)	Recognise a shaded quarter of a circle	F		49%	41%	8%	
18		- 10 = 46	S	B	58%	50%	8%	
26	Multiply two-digit number by 2, not crossing tens	71 x 2 = _	M	X	28%	21%	7%	
42	Find the perimeter of a rectangle	Perimeter of 72m x 100m rectangle, all sides marked	I		14%	7%	7%	
19	Divide two-digit number by 4	48 ÷ 4 = _	D		33%	27%	7%	
27	Read temperature from scale	Read 13 °C on scale - 30° to 40° degrees, numbered every 10°	R		46%	39%	6%	
36	Approximate the addition of three-digit numbers	Round each part of 897 + 406 to nearest 100	G		19%	13%	6%	
24		43 - _ = 37	S	B	50%	44%	6%	
15	Add two digit numbers, crossing tens	27 + 36 = _	A		60%	55%	5%	
32	Divide a two-digit number by 5	85 ÷ 5 = _	D		19%	14%	5%	
25	Convert metres to centimetres	How many centimetres in 4 metres ?	M	L	38%	33%	5%	
34	Add fractions	½ + ¼ = _	F		16%	11%	5%	
38	Fraction recognition (three tenths)	Recognise three tenths of a 2x5 rectangle	F		12%	7%	5%	
35	Add three-digit numbers, crossing 10s and 100s	284 + 178 = _	A		25%	20%	5%	
30	2 step word problem involving x and +	3 Oranges @ 11p and 1 pineapple @ 95p	M	A	£	25%	20%	5%
21	Read weight from scale	Read 400g on scale 0 to 3kg, numbered every 500g	R		29%	24%	5%	
29	Order numbers with one or two decimal places	Order 3.71 3.17 31.7 7.13 37.1	P		40%	35%	5%	
40	Divide three-digit number by 25, in a word problem	25 books in pack. Need 450 books. How many packs?	D	E	10%	6%	4%	
44	Subtract decimals with one decimal place	4.6 - 0.9 = _	S	F	9%	6%	4%	
23	Multiply teens number by 3, not crossing tens	13 x 3 = _	M	X	50%	46%	3%	
6	Read time to half hour on a digital clock, add 1 hour	Read 10:30 on a digital clock. What time 1 hour later ?	A	T	61%	57%	3%	
33	Subtract length, crossing tens, in a word problem	Ribbon 94 cm. Cut off 39 cm. How many cm left?	S	L	17%	14%	3%	

National Numeracy Project - June 1998
Year : 3 Cohort: 2

Item Facilities Report							Project - National Difference
Item No.	Written Test	Mathematical content			Project	National	
5		$18 - _ = 13$	S	B	73%	70%	3%
37	Divide two-digit number by 3, with remainder	$67 \div 3 = _$	D		7%	5%	2%
7	Find two numbers that add to....	$_ + _ = 28$	A	O	85%	83%	2%
20	Multiply a single digit by itself (square number)	$6 \times 6 = _$	M	N	49%	47%	2%
41	Subtract a four digit number from 3000	$3000 - 1997 = _$	S		5%	3%	2%
2	Add ten to teens number	$19 + 10 = _$	A	X	89%	87%	2%
39	Subtract three-digit numbers, crossing 10s and 100s	$354 - 159 = _$	S		10%	8%	2%
17	'15 percent of	Ring even numbers in range 5 to 21	N		65%	63%	1%
11	Add three single digits	$3 + 4 + 8 = _$	A		87%	85%	1%
43	Divide a two-digit number by 4, with remainder	$93 \div 4 = _$	D		4%	3%	1%
45	Volume of cuboid by counting cubes	Number of cm cubes in 2cm x 3cm x 4cm cuboid	V		8%	8%	0%
12	Order five numbers less than 100	Order 73, 47, 6, 12, 55	P		91%	90%	0%
1	Count to 7	Count 7 bags of crisps	A		99%	99%	0%
10	Subtract single digit from teens number, in word problem	12 Birds. 5 fly away. How many left ?	S	E	88%	88%	0%
3	Recognise and find the total of 5p, 2p and 1p coins	5p+2p+1p+1p How much altogether?	A	£	92%	92%	0%
13	Divide money, in a word problem	5 biscuits cost 25p. How much is one biscuit ?	D	E	72%	72%	-1%
9	Read a bar chart, scale marked in ones	Read off the bar - 6 children	R	H	84%	87%	-2%
4	Subtract single digits, in a word problem	E. has 4 apples. J. has 7. How many more has J ?	S	E	73%	79%	-6%

National Numeracy Project - June 1998
Year : 3 Cohort: 2

Item Facilities Report							Project - National Difference
Item No.	Mental Test	Mathematical content			Project	National	
17	'Subtract' 30 from a two digit number	56 subtract 30	S		37%	26%	11%
12	'Write in figures' three digit number	Write in figures 506	P		69%	58%	11%
14	'Write to the nearest hundred	Write 254 to nearest 100	G		39%	30%	10%
16	'Multiply by' with single digits	Multiply six by four	M		28%	20%	8%
15	'Difference between' 10 and a two digit number;	Difference between 73 and 10 ?	S		31%	23%	8%
13	Take away a number from....it leaves....what is the number ?	Take away a number from 81.It leaves 72.What's the number ?	S	B	39%	32%	7%
7	'Sum of two single digits, crossing ten	Sum of nine and eight	A		59%	52%	7%
21	'Add' two two digit numbers, crossing tens	28 add 43	A		25%	18%	7%
11	'Half of' two digit number	One half of 28	D		45%	39%	7%
10	'Add' single digit to two digit number, crossing tens	Add 6 to 89	A		58%	53%	5%
3	'Share' between two	Share 10 sweets equally between two	D	E	79%	74%	5%
5	'Plus' with single digits	Four plus six	A		77%	73%	4%
22	Division of length,in a word problem, no remainder	String is 84cm. Cut in 4.Length of each piece ?	D	L	15%	10%	4%
19	'...is more than....' How many more ?	45 is more than 7. How many more ?	S		14%	9%	4%
23	'Divide by' 100, no remainder	Divide 700 by 100	D		16%	13%	3%
2	Addition of money,in a word problem	T. has 36p. R. gives her 10p. How much now ?	A	£	78%	75%	3%
20	'Multiplied by' with single digit numbers	Seven multiplied by nine	M		12%	10%	3%
6	'Times' by 10	Eight times ten	M		72%	70%	2%
4	'Take away' single digit from a teens number	Twelve take away four	S		77%	75%	2%
1	'Add' three single digit numbers	Five add three add two	A		89%	87%	2%
24	What number multiplied by itself makes....?'	What number multiplied by itself makes 36 ?	N		14%	12%	2%
9	'Share' among 6	60p shared among 6 children. How much each ?	D	£	62%	60%	2%
18	'Remainder' when dividing by £	Remainder when 27 is divided by £	D		9%	7%	2%
8	Multiplication in a word problem, single digits	3 dominoes. Each has 5 dots. Dots altogether ?	M	E	79%	78%	0%

National Numeracy Project - June 1998

Year : 3

Cohort : 2

Project Level

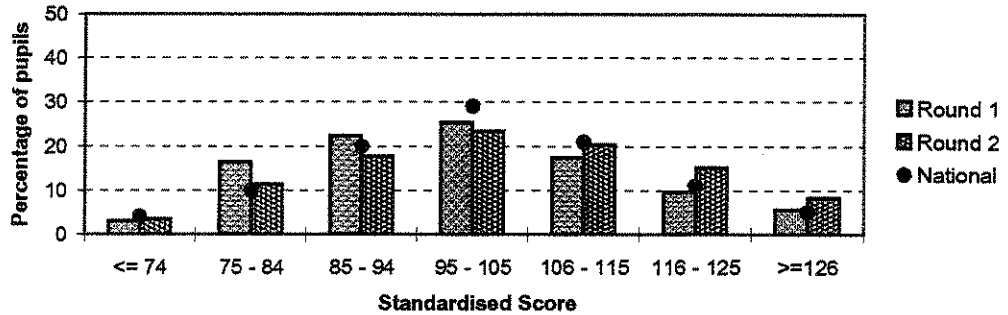
No. of Round 1 Pupils

7796

No. of Round 2 Pupils

8844

Chart 1 : Overall Test Score distribution



The above chart shows the percentage of pupils in the project in the different age-standardised score bands for the first and second round of testing and compared with the National standardised score distribution. Similar distributions for the written and mental tests are shown below.

Chart 2: Written Test Score distribution

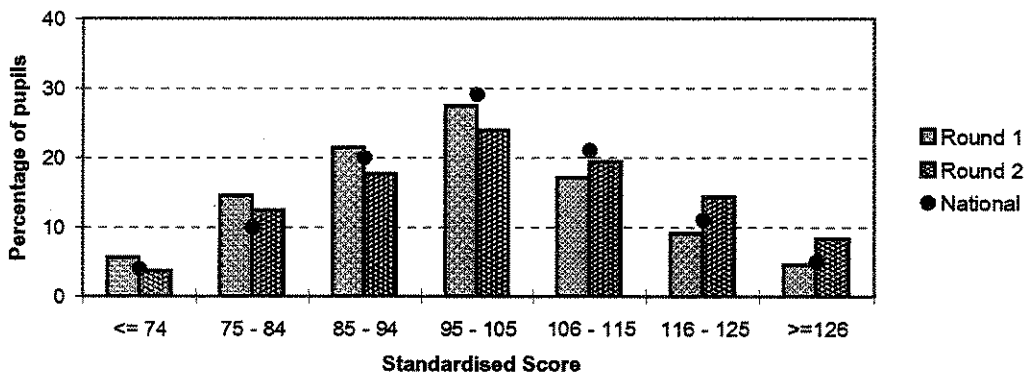
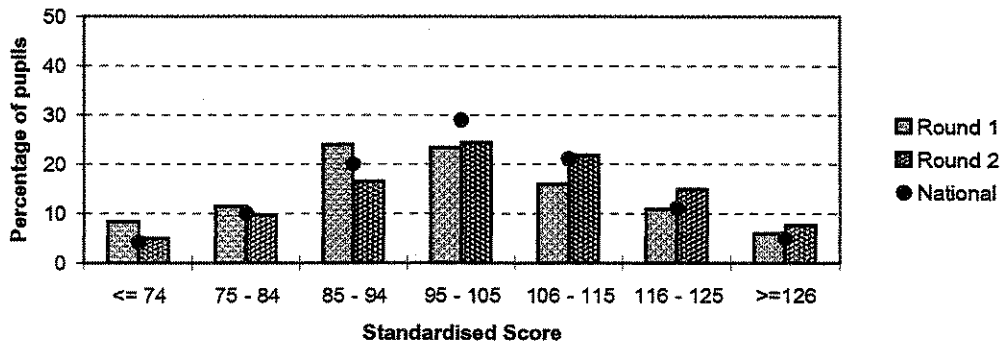


Chart 3 : Mental Test Score distribution



(continued)

National Numeracy Project - June 1998

Year : 3

Cohort : 2

Project Level

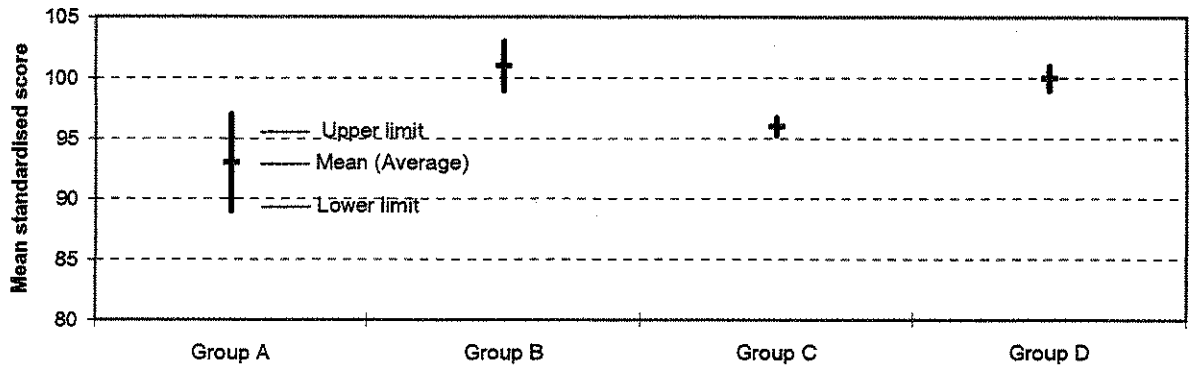
No. of Round 1 Pupils

7796

No. of Round 2 Pupils

8844

Example Chart : Mean scores



The above example shows, for each of four groups, the mean (average) standardised score and an estimate of the "95% confidence band" for each of these mean scores. Such a band means that we can be 95% certain that the mean score lies between the upper and lower limits of the vertical line, as annotated for Group A. If the top of a vertical line is lower than the bottom of another vertical line, then it is likely that there is a real difference between the two groups. If on the other hand the vertical lines overlap, then it is likely that any difference between the two scores is not significant. In this example, the difference between Groups A and B is likely to be real but the difference between Groups B and D is not significant.

Chart 4 : Mean scores for second round of testing

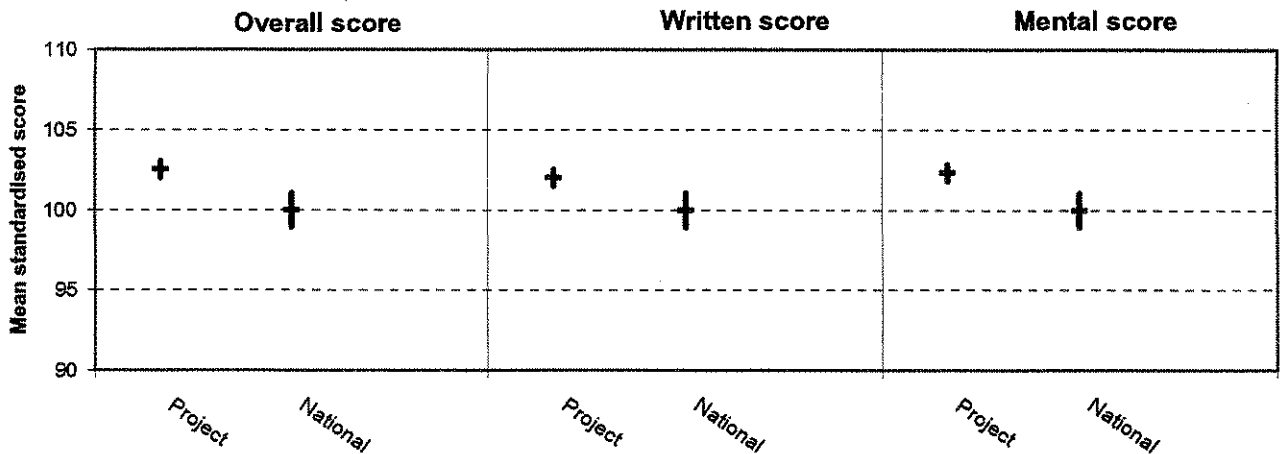


Chart 4 shows the mean (average) score for the project as a whole and compares it with the National Standardisation sample.

(continued)

National Numeracy Project - June 1998

Year : 3

Cohort : 2

Project Level

No. of Round 1 Pupils

7796

No. of Round 2 Pupils

8844

Chart 5 : Mean project scores for second round of testing

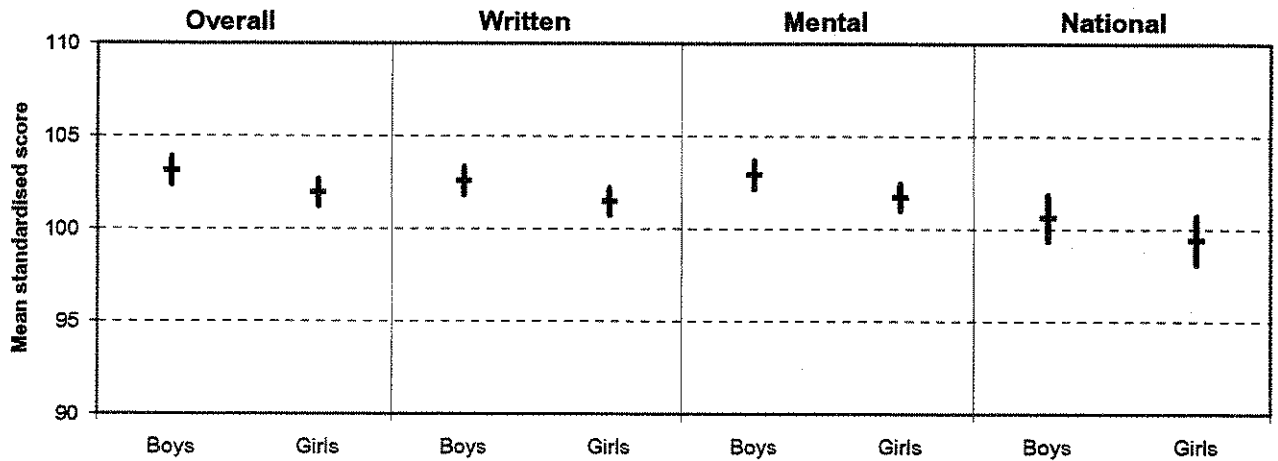


Chart 5 shows the mean (average) score in the project separately for boys and girls and compares it with the National Standardisation sample.

Chart 6 : Mean Standardised scores by term of Birth

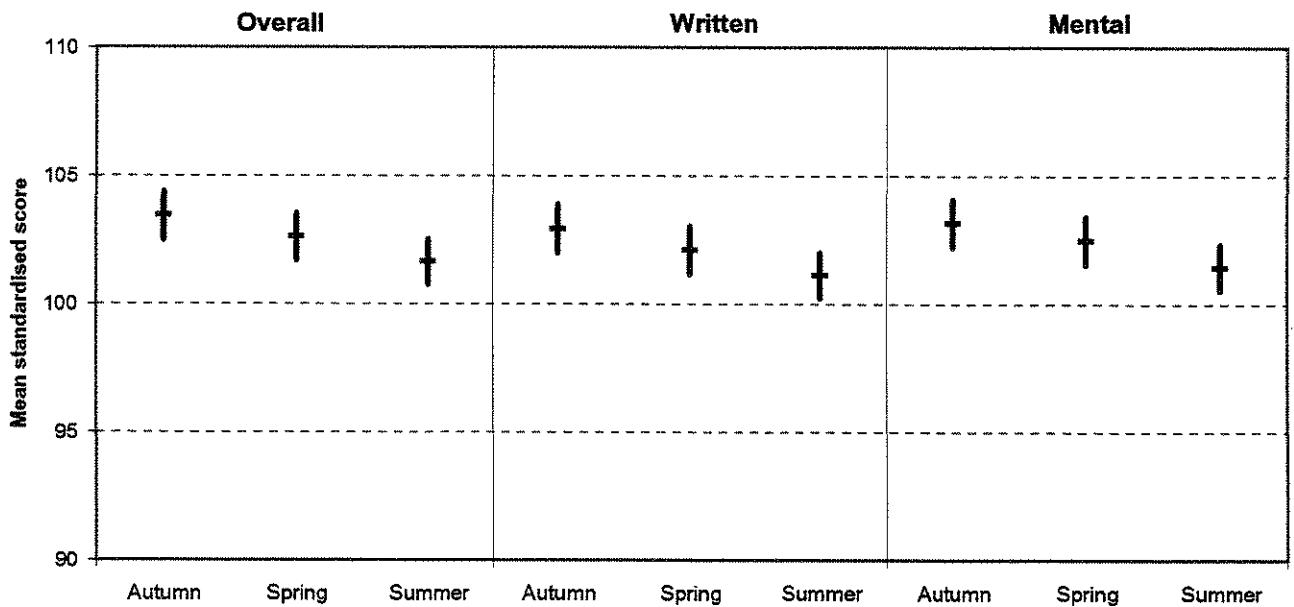


Chart 6 shows the comparison of the mean (average) score of pupils born in the Autumn, Spring and Summer.

(continued)

National Numeracy Project - June 1998

Year : 3

Cohort : 2

Project Level

No. of Round 1 Pupils

7796

No. of Round 2 Pupils

8844

Chart 7 : Mean Progress scores

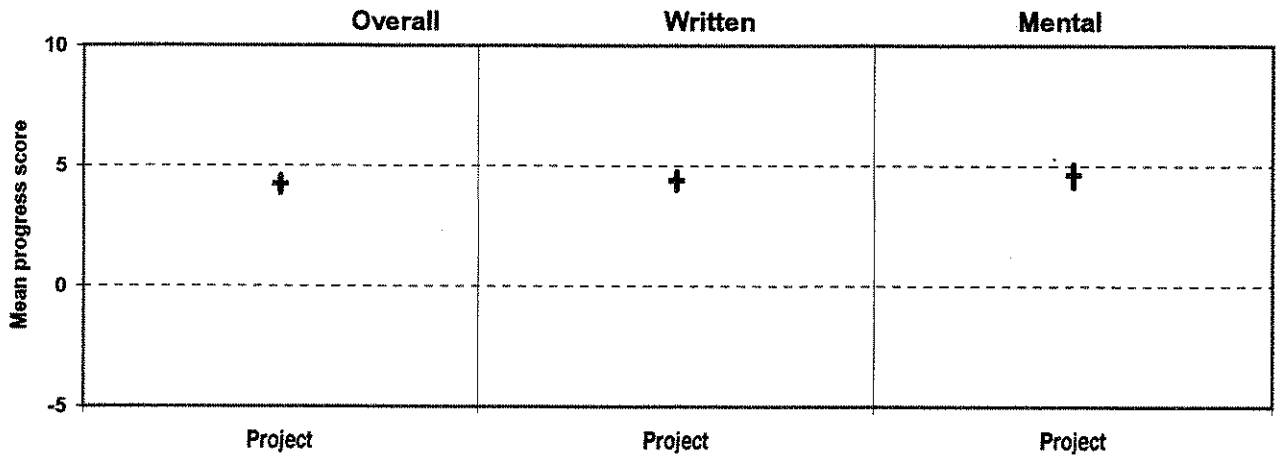


Chart 7 shows the average progress made by the pupils between the first and second rounds of testing. Progress is measured by the difference in the standardised scores between both rounds of testing.

Any line which lies completely above the horizontal zero line indicates significant progress from Round 1 to Round 2.

Cohort 2 – Year 5

Contents:

Project Report 1	Standardised scores and progress measures by background data for Project
Project Report 2	Round 2 Standardised scores by LEA
Project Report 3	Progress scores (Round 1-2) by LEA
Item Facilities Report	Comparison of % of correct answers for Project with % from National standardisation sample
Chart 1	Round 2 Overall Test score distribution
Chart 2	Round 2 Written Test Score distribution
Chart 3	Round 2 Mental Test Score distribution
Chart 4	Mean scores for second round of testing
Chart 5	Mean scores for Boys and Girls
Chart 6	Mean scores by term of birth
Chart 7	Mean Progress scores (Round 1 to Round 2)

Project Report 1 - National Numeracy Project - June 1998
Cohort 2 - Year 5 - Mean Standardised Test Scores
Summary by background data- ALL LEAs

	Written Round 2		Mental Round 2		Overall Round 2		Written Progress		Mental Progress		Overall Progress		No. of pupils absent	Total no. of pupils	Percent of pupils	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.				
																Mean
Total	100.4	15.9	101.9	16.6	101.3	16.2	2.8	9.3	4.0	12.1	3.4	8.8	1962	9611	100%	
Gender	Boys	100.2	16.1	102.3	17.0	16.5	2.7	9.2	3.9	11.8	3.4	8.7	1026	4850	50%	
	Girls	100.5	15.7	101.6	16.2	101.3	15.8	2.8	9.3	4.0	3.5	8.8	924	4749	49%	
Ethnic group	Not known	98.0		80.3	19.6	100.0							12	12	0%	
	White	101.3	15.9	102.7	16.6	102.3	16.1	2.2	8.8	3.2	2.7	8.2	1323	6339	66%	
	Black Caribbean	97.0	15.6	99.9	16.8	98.4	16.1	2.9	10.2	4.7	3.9	9.5	88	544	6%	
	Black African	100.3	14.8	102.9	15.9	101.7	15.1	4.1	9.4	6.4	5.2	8.3	46	316	3%	
	Black Other	98.2	15.0	101.3	16.0	99.7	15.2	2.1	8.4	3.4	2.9	8.3	26	164	2%	
	Indian	103.6	15.5	104.6	16.7	104.5	15.8	5.8	10.0	5.7	6.2	9.8	62	428	4%	
	Pakistani	95.0	15.1	98.2	16.0	96.4	15.5	3.8	9.4	5.1	4.5	9.1	179	734	8%	
	Bangladeshi	96.9	15.6	97.3	16.3	97.3	15.8	4.6	11.7	6.6	5.2	11.5	125	540	6%	
	Other	100.9	15.9	102.4	16.7	101.9	16.3	3.5	9.5	5.4	4.5	9.1	85	513	5%	
	Not known	93.2	18.6	91.7	19.6	93.7	18.8	4.0	5.1	14.2	8.6	7.8	28	33	0%	
	Yes	94.8	15.1	97.0	15.9	95.8	15.3	2.0	9.7	3.6	2.4	2.8	9.1	803	3524	37%
	No	103.7	15.4	104.9	16.3	104.6	15.7	3.2	9.0	4.2	11.8	3.8	8.5	1093	6007	63%
Receives Free School Meals?	Not known	94.9	18.8	95.0	19.7	95.6	19.6	8.0	9.1	8.4	8.6	8.3	66	80	1%	
	None	104.6	14.5	106.2	15.4	105.8	14.7	3.0	9.4	4.4	3.7	8.9	1338	7055	73%	
	Stage 1	90.2	12.5	91.8	12.9	90.7	12.4	2.3	9.2	2.6	2.6	8.5	200	931	10%	
	Stage 2	87.1	12.1	89.5	12.8	87.8	11.9	2.3	9.2	2.8	2.6	8.2	196	881	9%	
	Stage 3	82.8	11.6	84.2	11.8	83.1	11.3	2.1	8.1	1.9	2.2	7.5	93	307	3%	
	Stage 4 or above	80.6	12.3	81.0	12.5	80.4	12.0	1.6	9.0	1.7	1.9	7.6	69	216	2%	
	Not known	98.7	15.4	101.4	17.0	100.1	15.9	1.8	8.4	4.4	3.0	8.2	66	221	2%	
	New to English	84.3	13.1	85.6	13.5	84.3	13.0	2.8	8.4	4.2	12.7	3.6	8.7	38	88	1%
	Becoming familiar with English	90.2	13.8	92.0	14.7	90.8	13.9	3.8	11.0	4.4	11.7	4.3	9.9	93	442	5%
	Becoming confident with English	95.4	13.8	97.6	15.0	96.5	14.1	4.3	10.4	5.6	12.9	4.8	10.4	209	880	9%
Stage of Learning English	Very fluent in most contexts	105.5	15.3	107.1	16.3	106.7	15.6	5.0	9.8	7.1	6.1	9.4	153	796	8%	
	English first language	101.2	15.9	102.7	16.5	102.2	16.1	2.3	8.9	3.4	2.9	8.3	1448	7351	76%	
	Not known	95.2	10.5	98.7	14.7	97.4	11.3	-9	7.6	5.8	1.9	8.2	21	54	1%	

* Number of pupils absent from either rounds of testing

Project Report 1 - National Numeracy Project - June 1998
Cohort 2 - Year 5 - Mean Standardised Test Scores
Summary by background data- ALL LEAs

	Written Round 2			Mental Round 2			Overall Round 2			Written Progress			Mental Progress			Overall Progress			No. of pupils absent	Total no. of pupils	Percent of pupils
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.			
4 terms or less	104.7	18.4	109.1	15.7	106.7	17.4	.7	7.1	6.2	9.4	2.7	6.2	3	9	0%						
5	100.0	43.8	95.5	37.5	100.0	43.8	5.0	15.6	-5.5	6.4	2.5	13.4	1	3	0%						
6	101.3	21.9	100.3	17.1	101.5	19.9	1.7	8.8	6.0	11.3	3.7	6.9	1	7	0%						
7	98.9	15.3	103.6	17.4	101.2	16.4	4.7	12.9	9.3	19.3	7.1	13.1	5	18	0%						
8	92.7	16.2	92.8	18.4	92.5	16.6	2.5	10.5	3.8	15.2	2.8	9.0	7	31	0%						
9	97.7	12.1	101.0	16.6	99.1	14.0	2.6	7.3	2.2	9.5	2.8	6.1	3	13	0%						
10	93.4	13.2	101.8	15.7	96.8	14.3	-5.2	11.1	6.5	12.3	-1.0	10.5	2	13	0%						
11	94.6	16.3	96.0	16.2	95.2	16.5	4.3	8.8	6.7	10.3	5.6	8.5	8	37	0%						
12	86.1	11.4	90.0	14.9	87.1	12.4	3.5	7.9	4.3	11.7	3.9	7.2	1	12	0%						
13	95.1	15.2	93.1	15.0	94.4	14.9	.6	10.6	1.3	9.6	.8	9.3	5	46	0%						
14	98.7	16.0	100.3	16.7	99.6	16.4	3.9	9.7	4.8	12.0	4.6	8.9	49	397	4%						
15	101.0	14.6	103.7	15.7	102.4	15.0	3.6	9.7	6.2	11.8	4.9	9.0	111	786	8%						
16	101.4	16.3	103.4	16.7	102.6	16.5	3.4	9.8	5.1	12.5	4.3	9.4	209	1089	11%						
17	101.9	15.7	103.2	16.3	102.8	15.9	2.7	9.0	3.6	11.8	3.2	8.4	702	4796	50%						
18	99.6	15.4	102.8	18.0	101.2	16.3	1.5	8.5	4.7	11.8	2.9	8.3	10	96	1%						
19	104.1	14.6	106.7	17.3	105.6	15.0	1.9	11.5	3.4	16.4	2.5	10.8	5	58	1%						
20	105.8	15.6	106.4	15.8	106.6	15.6	1.8	9.2	3.0	10.7	2.5	8.9	5	80	1%						
21	94.6	17.7	89.1	19.1	92.3	18.5	1.7	9.0	-5	6.4	.5	6.8	2	17	0%						
22	74.0		82.0		76.0		2.0		3.0		2.0			1	0%						
23	96.6	16.6	97.7	20.6	97.3	15.7	4.2	9.0	-2.9	17.5	1.9	10.0	3	14	0%						
Not known	96.8	15.8	98.4	16.8	97.6	16.2	2.3	9.4	3.1	12.4	2.6	9.1	830	2088	22%						

* Number of pupils absent from either rounds of testing

Project Report 2 - National Numeracy Project - June 1998
Cohort 2 - Round 2 - Mean Standardised Test Scores
Summary by LEA

Year Group: 5

		Written		Mental		Overall		No. of pupils absent	Total no. of pupils
		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.		
Total		100.4	15.9	101.9	16.6	101.3	16.2	1026	9611
LEA	1	102.1	16.2	104.1	17.2	103.3	16.7	23	705
	2	106.3	15.3	107.1	16.3	107.2	15.5	31	614
	4	100.1	15.7	102.7	16.5	101.5	16.0	50	867
	5	100.0	15.4	100.9	16.4	100.7	15.8	62	1003
	6	99.6	16.1	101.4	17.0	100.6	16.4	54	882
	7	99.8	16.5	101.1	17.1	100.6	16.7	17	395
	8	100.4	15.8	102.7	16.8	101.6	16.2	29	540
	9	103.0	15.3	103.5	14.9	103.6	15.1	56	959
	10	98.4	15.2	99.8	16.6	99.2	15.6	27	550
	12	96.9	16.2	99.2	16.7	98.0	16.3	63	1103
	13	100.3	15.6	102.0	16.6	101.3	16.0	42	640
	14	96.1	15.1	97.8	16.9	97.0	15.9	559	915
15	101.3	15.9	102.8	16.0	102.3	16.0	13	438	

Project Report 3 - National Numeracy Project - June 1998
Cohort 2 - Round 2 - Mean Progress Standardised Test Scores
Summary by LEA

Year Group: 5

	Written Progress Score		Mental Progress Score		Overall Progress Score		No. of pupils absent	Total no. of pupils	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.			
Total	2.8	9.3	4.0	12.1	3.4	8.8	1962	9611	
LEA	1	3.0	9.8	5.6	11.8	4.2	9.1	100	705
	2	2.5	8.9	2.2	12.8	2.6	8.6	75	614
	4	2.1	8.8	3.5	11.4	2.8	8.3	127	867
	5	1.8	8.5	2.2	11.8	2.2	7.8	160	1003
	6	3.2	10.5	4.9	13.0	4.2	9.7	166	882
	7	3.1	9.2	1.6	12.1	2.8	8.6	62	395
	8	2.7	8.2	5.0	12.2	3.7	8.1	65	540
	9	1.9	8.3	2.0	9.7	2.1	7.2	175	959
	10	3.4	10.9	7.0	13.1	4.6	10.8	101	550
	12	3.3	9.7	4.6	13.1	4.1	9.4	192	1103
	13	5.3	10.1	6.3	12.5	6.0	9.7	96	640
	14	2.7	8.3	4.2	10.9	3.4	7.6	586	915
	15	1.7	8.1	3.4	10.2	2.5	7.3	57	438

National Numeracy Project - June 1998
Year : 5 Cohort: 2

Item Facilities Report							Project - National Difference
Item No.	Written Test	Mathematical content			Project	National	
35	Number sequence, involving negative numbers. Rule is 3 less than	Find next number : 13, 10, 7, 4, 1 _	N		40%	26%	14%
41	Percentage recognition	Quarter of circle is shaded. What % is this ?	%		34%	21%	13%
39	Recognition of a prime number	Ring a prime number less than 50	N		25%	16%	9%
23	Ring numbers which divide into 36, no remainder	Ring two factors of 36 from 3, 5, 7, 9, 11.	N		51%	43%	8%
12	Multiply a two digit number by 2, crossing tens	$71 \times 2 = _$	M	X	70%	64%	6%
45	Multiply fractions	$\frac{1}{2} \times \frac{1}{2} = _$	F	X	12%	7%	5%
9	Doubling	Double 17	M		84%	81%	4%
29	Multiply, in a word problem	6 mini rolls in pack. How many in 25 packs ?	M	E	50%	47%	4%
24	Add decimals	$3.6 + 2.4 = _$	F		58%	54%	4%
43	Approximate multiplication of three digit decimal numbers by rounding	Approximate 4.98×11.05 by rounding to whole numbers	G		15%	12%	4%
40	Divide a two digit number by a two digit number, with remainder	$47 \div 23 = _$	D	X	23%	20%	3%
33	Fraction recognition	8 penny coins, 6 ringed. What fraction is this ?	F		35%	31%	3%
49	Multiply Decimals	$2.4 \times 0.5 = _$	F	X	5%	2%	3%
48	Find a percentage of a three digit number	40% of 300 metres	%	L	9%	6%	3%
22	Add three digit numbers, crossing tens and hundreds	$435 + 397 = _$	A	X	69%	67%	2%
42b	Read a scale	Mark 250 ml on a scale numbered in 0.1 of a litre.	R		47%	44%	2%
14	Place value	Ring number with 7 tens : 7 69 78 107 707	P		65%	63%	2%
47	Multiply a three digit number by a two digit number	$164 \times 57 = _$	M	X	7%	5%	2%
21	Order fractions and mixed numbers	Order $\frac{1}{2}$, $1\frac{1}{2}$, 2, $\frac{1}{4}$, $1\frac{1}{4}$.	F		47%	45%	2%
34	Multiply a two digit number by 9.	$48 \times 9 = _$	M	X	32%	30%	2%
19	Add money	$\pounds 25.62 + \pounds 43.55 = _$	A	£	60%	58%	2%
32	Divide a two digit number by 4, with remainder.	$51 \div 4 = _$	D	X	29%	27%	2%
37	Find width of a rectangle, given perimeter and length	Perimeter is 48cm length is 14cm and width is ?	I		28%	26%	2%
26	Divide two digit numbers by 5, no remainder	$85 \div 5 = _$	D	X	56%	54%	2%
4	Add weight, in a word problem	Harry weighs 130kg. Brother 60kg Total weight ?	A	K	91%	90%	1%
46	Average speed in a word problem	Car travels 120 miles in three hours. Average speed ?	D	T	26%	25%	1%
11	Subtract three digit numbers, in a word problem, no crossings	275 children, 143 go to a museum. How many are left	S	E	75%	74%	1%
28	Subtract money	$\pounds 49.19 - \pounds 17.25 = _$	S	£	35%	35%	0%
16	Subtract length, not crossing tens, in a word problem	R. jumps 98 cms C. jumps 75 cms , How many more cms ?	S	L	71%	70%	0%
7		$75 - _ = 67$	S	B	79%	79%	0%
38	Divide a four digit number by 9, no remainder	$9729 \div 9 = _$	D	X	18%	18%	0%

National Numeracy Project - June 1998
Year : 5 Cohort: 2

Item Facilities Report

Item No.	Written Test	Mathematical content			Project	National	Project - National Difference
2	Add single digit numbers, in a word problem	J has 4 comics. gets 5 more. How many altogether ?	A	E	98%	98%	0%
5		$_ + 37 = 45$	A	B	88%	88%	0%
1	Read a scale (whole numbers)	Scale numbered in 5's from 0 to 15, read 8	R		90%	90%	0%
42a	Approximation from a recipe	Approximate three quarters of 125 grams	G		16%	17%	0%
3	Add four single digit numbers	$7 + 4 + 6 + 2 = _$	A		94%	95%	-1%
6	Multiplication of money, in a word problem	Saves 50p each week. How much in 8 weeks ?	M	£	74%	75%	-1%
27	Approximate addition of three digit numbers by rounding	Round each part of $102 + 99$ to the nearest 100	G		58%	59%	-1%
8	Subtract money, in a word problem	Bananas cost 18p M. has 6p. How much more needed	S	£	88%	90%	-2%
31	Find fraction of an area.	Find half of 6cm x 10cm grid.	I		33%	35%	-2%
13	Subtract time (minutes), in a word problem	Difference between 1:20 and 2:40 on an analogue clock	S	T	71%	73%	-2%
15	Estimate to the nearest £5	Ring amount nearest to £5 : £4.50 £5.45 £4.85 £5.10 £4.00	G		60%	61%	-2%
10	Choose five coins to make a sum of money	Choose five coins to make 37p	A	£	74%	75%	-2%
44	Convert pounds to grams	Ring best equivalent to 1lb: 1g 1kg 100g 100kg 500g	G		11%	13%	-2%
30	Subtract three digit numbers, crossing tens and hundreds.	$513 - 224 = _$	S	X	37%	39%	-2%
36	Subtract four digit numbers, involving crossings	$4004 - 2990 = _$	S	X	26%	28%	-2%
17	Subtract length, crossing tens, in a word problem	Ribbon 94cms. Cut off 39cms. How many cms left ?	S	L	55%	57%	-3%
25	Add fractions	$\frac{1}{2} + \frac{1}{4} = _$	F	X	41%	44%	-3%
20	Read a pictogram, symbol representing 2 cars	Interpret total number represented	H		45%	48%	-3%
18	Order decimal numbers, or 2 decimal places	Order 3.71, 3.17, 31.7, 7.13, 37.1	P	F	66%	70%	-4%

National Numeracy Project - June 1998
Year : 5 Cohort: 2

Item Facilities Report							Project - National Difference
Item No.	Mental Test	Mathematical content			Project	National	
23	'Square root'	Square root of 81	N		31%	17%	14%
17	'Divide by' 7	Divide 49 by 7	D		48%	37%	10%
26	Writing a fraction as a decimal	Three quarters as a decimal.	F		16%	6%	10%
22	'Divide by 100' with a whole number answer	4000 divide by 100	D		27%	20%	8%
12	What number added to? two digit numbers, without crossing tens	What added to 44 gives 69 ?	S	E	45%	38%	8%
30	'Cubed'	Two cubed	N		13%	7%	7%
24	'Share equally among' 4, no remainder	Share 92 equally among 4	D		18%	11%	7%
19	'Write to the nearest thousand' a four digit number	Write 3498 to the nearest 1000	G		39%	33%	6%
7	'Write in figures' four digit numbers	Write in figures 1072	P		77%	72%	6%
20	Multiplication of money, in a word problem.	T shirt costs £3.95. Cost of two ?	A	L	36%	31%	5%
10	'Times' by 6	Eight times six	M		53%	48%	5%
27	Multiply a two digit number by 3, crossing tens	Multiply 48 by 3	M		14%	9%	5%
5	'One half of'	One half of 28	D		76%	72%	4%
21	'Less than' two digit numbers, without crossing tens	25 less than 89	S		32%	28%	4%
14	Multiply a single digit number by 9	Seven multiplied by nine	M		51%	47%	4%
25	'Remainder' when dividing by 6	Remainder when 77 divided by 6	D		19%	15%	4%
16	Division by 4 of length, in a word problem, no remainder	String 84cms. Cut into four. Length of pieces?	D	L	48%	44%	4%
29	'15 percent of'	15% of 200	%		8%	5%	3%
13	'Subtract' using two digit numbers, without crossing tens	Subtract 25 from 95	S		45%	42%	3%
28	Multiplication of 2 two digit numbers	18 multiplied by 25	M		5%	3%	2%
18	'Difference'	Write two numbers with a difference of 12	S	O	29%	27%	2%
11	'Sum' of two digit plus single digit number, crossing tens	Sum of 58 and 9	A		64%	62%	2%
8	'Total' of 4 single digit numbers, pairs of numbers making ten	Total of 8,3,7 and 2	A		76%	75%	1%
9	'Minus' two digit minus single digit number, crossing tens	66 minus 8	S		57%	57%	1%
6	'Total' of two digit numbers	Total of 21 and 19	A		75%	75%	0%
4	Addition of money, in a word problem	Tina has 36p, Rob has 10p. How much now ?	A		92%	93%	-1%
1	'Take away' 10 from teens number	Twelve take away ten	S		94%	95%	-1%
2	'Add' using single digit numbers	Add eight to seven	A		90%	92%	-2%
3	Multiplication by 7 in a word problem	Box holds 7 biscuits. 7 boxes hold ?	M		91%	93%	-2%
15	I subtract from a number, and get..... what is the number ?	Subtract 8 and get 27. What's the number ?	A	E	45%	48%	-3%

National Numeracy Project - June 1998

Year : 5

Cohort : 2

Project Level

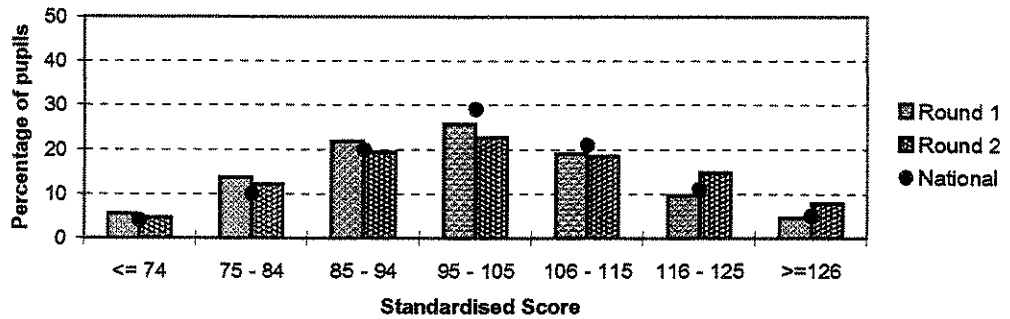
No. of Round 1 Pupils

7679

No. of Round 2 Pupils

8561

Chart 1 : Overall Test Score distribution



The above chart shows the percentage of pupils in the project in the different age-standardised score bands for the first and second round of testing and compared with the National standardised score distribution. Similar distributions for the written and mental tests are shown below.

Chart 2: Written Test Score distribution

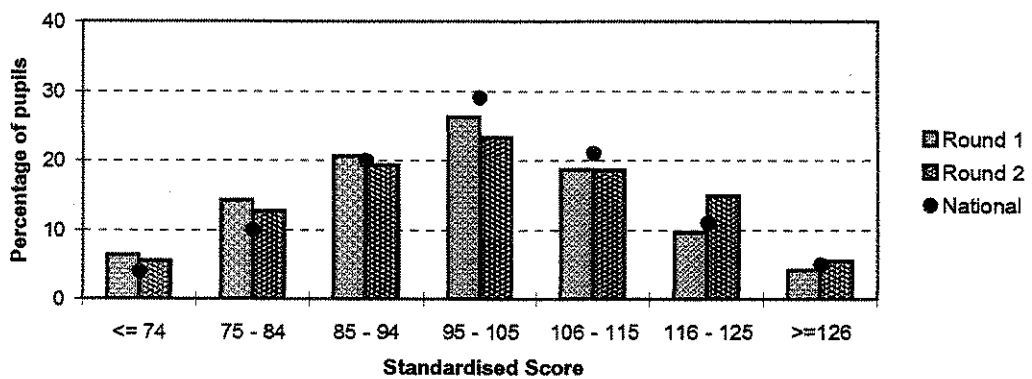
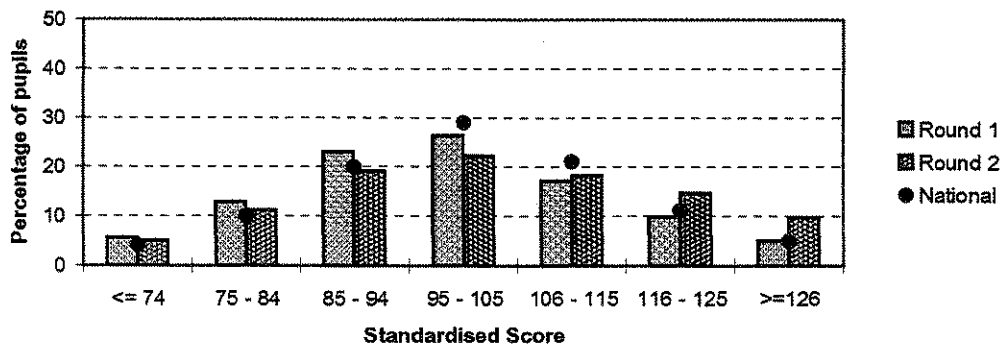


Chart 3 : Mental Test Score distribution



(continued)

National Numeracy Project - June 1998

Year : 5

Cohort : 2

Project Level

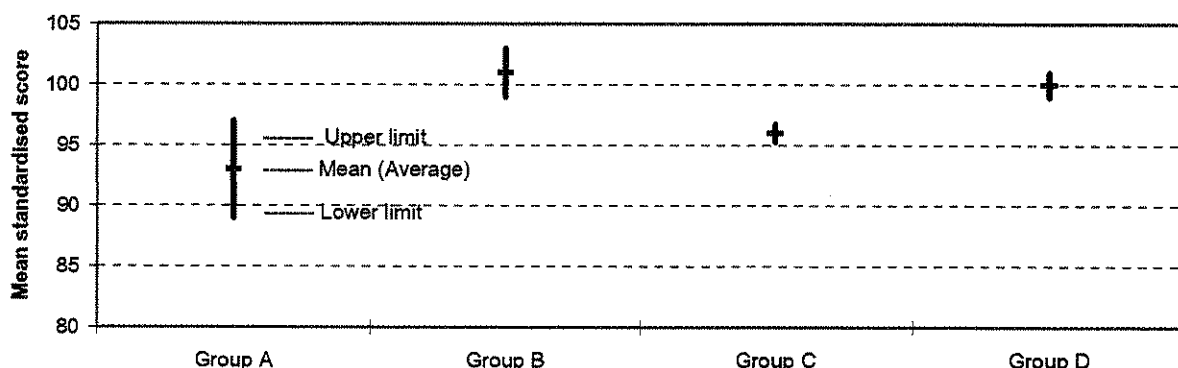
No. of Round 1 Pupils

7679

No. of Round 2 Pupils

8561

Example Chart : Mean scores



The above example shows, for each of four groups, the mean (average) standardised score and an estimate of the "95% confidence band" for each of these mean scores. Such a band means that we can be 95% certain that the mean score lies between the upper and lower limits of the vertical line, as annotated for Group A. If the top of a vertical line is lower than the bottom of another vertical line, then it is likely that there is a real difference between the two groups. If on the other hand the vertical lines overlap, then it is likely that any difference between the two scores is not significant. In this example, the difference between Groups A and B is likely to be real but the difference between Groups B and D is not significant.

Chart 4 : Mean scores for second round of testing

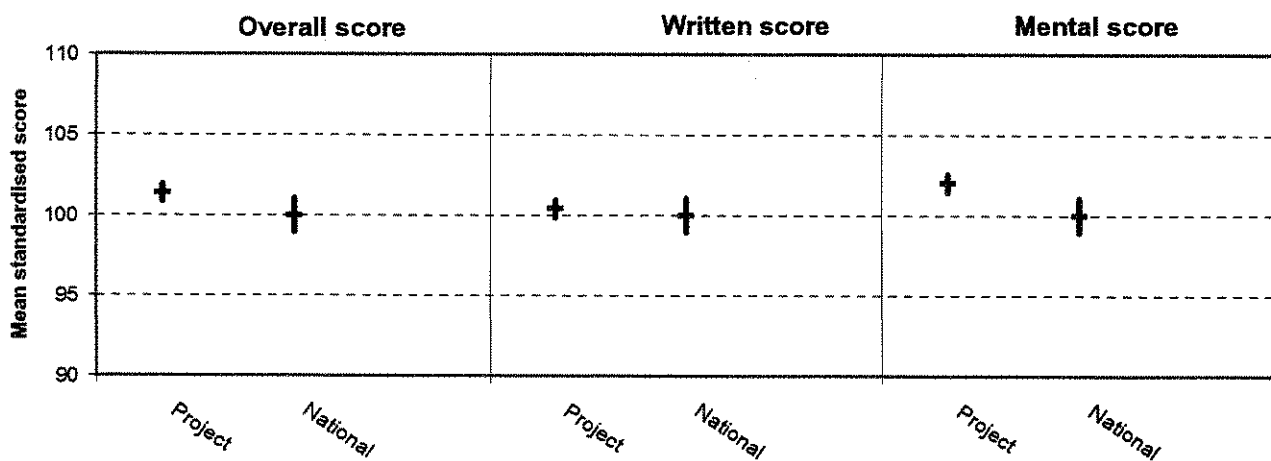


Chart 4 shows the mean (average) score for the project as a whole and compares it with the National Standardisation sample.

(continued)

National Numeracy Project - June 1998

Year : 5

Cohort : 2

Project Level

No. of Round 1 Pupils

7679

No. of Round 2 Pupils

8561

Chart 5 : Mean project scores for second round of testing

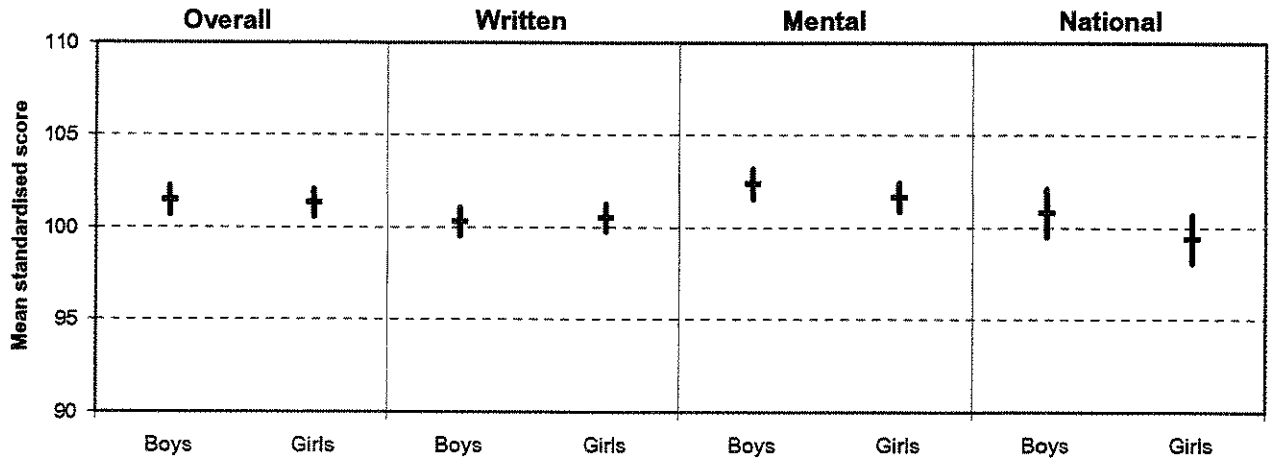


Chart 5 shows the mean (average) score in the project separately for boys and girls and compares it with the National Standardisation sample.

Chart 6 : Mean Standardised scores by term of Birth

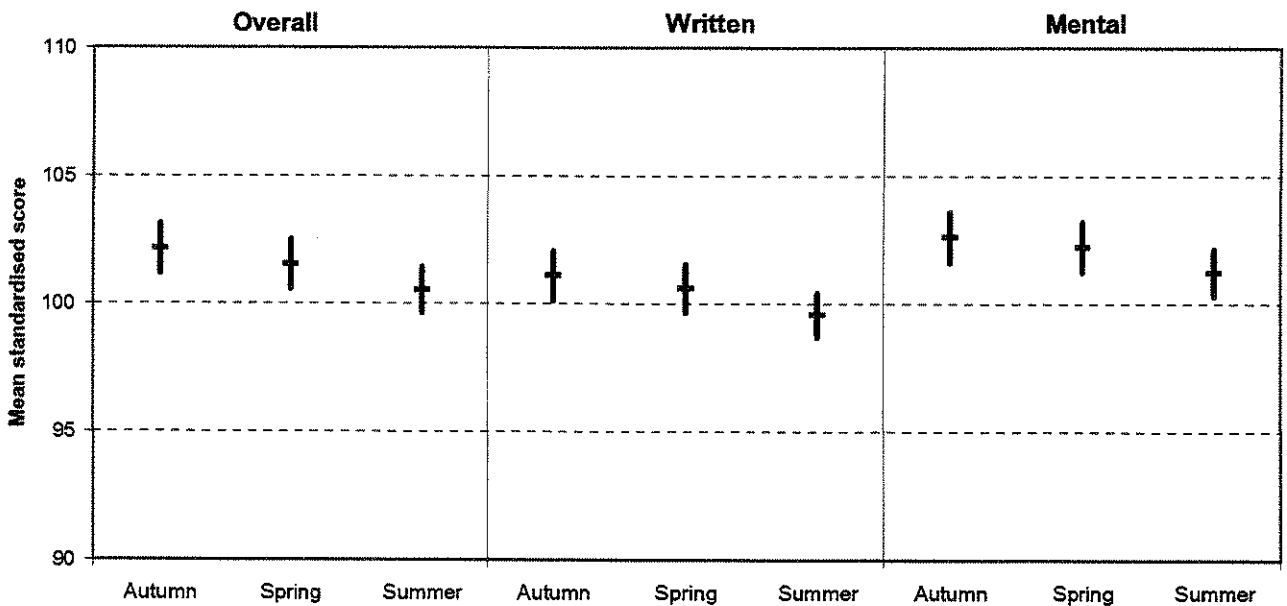


Chart 6 shows the comparison of the mean (average) score of pupils born in the Autumn, Spring and Summer.

(continued)

National Numeracy Project - June 1998

Year : 5

Cohort : 2

Project Level

No. of Round 1 Pupils

7679

No. of Round 2 Pupils

8561

Chart 7 : Mean Progress scores

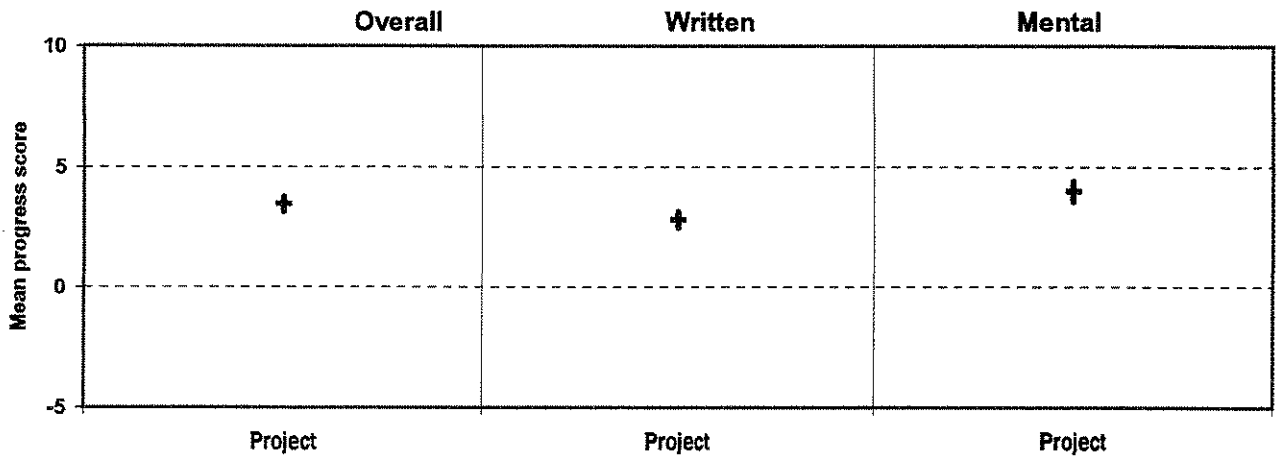


Chart 7 shows the average progress made by the pupils between the first and second rounds of testing. Progress is measured by the difference in the standardised scores between both rounds of testing.

Any line which lies completely above the horizontal zero line indicates significant progress from Round 1 to Round 2.

Cohort 3 – Year 1

Contents:

Project Report 1	Standardised scores by background data for project
Project Report 2	Round 1 Standardised scores by LEA
Item Facilities Report	Comparison of % of correct answers for Project with % from National standardisation sample
Chart 1	Round 1 Overall Test Score distribution
Chart 2	Round 1 Written Test Score distribution
Chart 3	Round 1 Mental Test Score distribution
Chart 4	Mean scores for first round of testing
Chart 5	Mean scores for Boys and Girls
Chart 6	Mean scores by term of birth

Project Report 1 - National Numeracy Project - June 1998
Cohort 3 - Year 1 - Mean Entry Standardised Test Scores
Summary by background data- ALL LEAs

		Written		Mental		Overall		No. of pupils absent	Total no. of pupils	Percent of pupils
		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.			
Total		98.5	14.5	96.6	16.1	98.4	14.4	630	11521	100%
Gender	Boys	97.8	14.8	95.6	16.6	97.7	14.8	329	5881	51%
	Girls	99.1	14.1	97.6	15.5	99.2	13.9	301	5639	49%
	Not known	131.0		128.0		131.0			1	0%
Ethnic group	White	99.6	14.6	98.1	16.1	99.7	14.5	443	7847	68%
	Black Caribbean	98.5	14.2	96.0	15.8	98.2	13.9	16	438	4%
	Black African	98.3	14.5	95.3	16.0	97.9	14.3	15	351	3%
	Black Other	99.5	13.8	97.5	15.7	99.4	13.6	8	211	2%
	Indian	98.3	13.5	95.9	14.5	97.9	13.2	23	548	5%
	Pakistani	91.4	12.5	87.8	14.5	90.6	12.2	43	939	8%
	Bangladeshi	95.7	14.1	90.6	15.2	94.3	13.5	42	482	4%
	Other	97.8	14.0	96.3	15.5	97.8	13.9	37	677	6%
	Not known	94.6	16.3	92.1	14.9	94.1	14.4	3	28	0%
Receives Free School Meals?	Yes	94.5	13.7	92.5	15.5	94.3	13.5	239	3673	32%
	No	100.5	14.5	98.6	16.0	100.4	14.4	367	7542	65%
	Not known	96.3	13.7	94.7	15.1	96.4	13.4	24	306	3%
Special Educational Needs level	None	101.4	13.9	99.6	15.3	101.4	13.8	418	8797	76%
	Stage 1	89.3	10.3	87.3	13.2	89.0	10.2	92	1185	10%
	Stage 2	87.1	9.7	85.8	13.5	87.2	9.7	70	943	8%
	Stage 3	85.0	11.1	81.8	13.3	84.6	10.8	20	281	2%
	Stage 4 or above	82.0	12.1	79.0	13.2	81.7	11.7	20	167	1%
	Not known	106.6	15.0	102.6	18.5	106.3	15.2	10	148	1%
	Not known	106.6	15.0	102.6	18.5	106.3	15.2	10	148	1%
Stage of Learning English	New to English	87.5	13.9	84.1	15.6	87.0	13.6	29	284	2%
	Becoming familiar with English	91.7	11.9	88.0	13.4	90.8	11.3	58	976	8%
	Becoming confident with English	96.4	13.2	93.0	15.2	95.7	13.1	32	722	6%
	Very fluent in most contexts	100.9	13.6	97.9	14.9	100.4	13.4	21	590	5%
	English first language	99.6	14.5	98.1	16.0	99.7	14.4	486	8922	77%
	Not known	92.3	15.1	95.1	18.8	93.8	15.7	4	27	0%
Received Nursery Education?	Yes	98.9	14.4	97.1	15.8	98.8	14.3	406	7895	69%
	No	98.8	14.7	97.3	16.5	98.9	14.8	91	1887	16%
	Not known	96.1	14.4	93.4	16.3	95.8	14.2	133	1739	15%
No. of terms Primary Education	1 term or less	89.9	14.3	89.6	16.5	90.3	14.4	16	153	1%
	2	93.5	13.1	91.2	15.8	93.2	13.2	21	342	3%
	3	98.0	14.2	95.9	16.6	98.0	14.3	69	1345	12%
	4	98.0	14.2	96.1	16.0	98.0	14.2	116	1971	17%
	5	99.2	14.4	97.6	15.8	99.2	14.3	317	6458	56%
	6 or more terms	98.4	15.4	95.0	16.7	97.8	15.1	91	1252	11%

Project Report 2 - National Numeracy Project - June 1998
Cohort 3 - Mean Entry Standardised Test Scores
Summary by LEA

Year Group: 1

		Written		Mental		Overall		No. of pupils absent	Total no. of pupils
		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.		
Total		98.5	14.5	96.6	16.1	98.4	14.4	630	11521
LEA	1	102.3	14.7	98.8	16.1	101.8	14.2	29	729
	2	99.4	14.2	97.9	16.0	99.4	14.3	43	838
	3	97.3	14.0	97.2	15.5	97.7	13.9	10	337
	4	101.8	15.4	100.9	17.4	102.2	15.6	41	724
	5	101.3	14.5	99.2	16.3	101.3	14.6	60	1103
	6	98.4	14.2	96.0	15.9	98.1	14.2	30	520
	7	95.4	13.5	91.7	16.2	94.7	13.7	18	387
	8	95.5	12.4	93.4	13.4	95.1	12.0	45	498
	9	96.5	14.5	94.3	15.2	96.2	13.8	40	705
	10	98.9	14.8	93.4	16.5	97.5	14.7	38	520
	11	99.5	15.0	96.7	16.7	99.1	15.1	52	935
	12	97.3	14.2	96.4	15.5	97.6	14.1	91	1805
	13	96.3	14.0	94.5	15.7	96.3	13.9	74	1167
	14	94.9	13.7	91.8	15.0	94.3	13.3	29	721
	15	101.1	13.9	104.0	14.3	102.9	13.6	30	532

National Numeracy Project - June 1998

Year : 1

Cohort: 3

Item Facilities Report							Project - National Difference
Item No.	Written Test	Mathematical content			Project	National	
A7	Reading the time (hours)	Read 8 o'clock on an analogue clock	T	R	72%	65%	7%
A13	'Odd number' recognition	Ring odd numbers in range 18 to 25	N		25%	18%	7%
A12	Divide money in a word problem	5 biscuits cost 25p. How much is one biscuit?	D	£	28%	22%	5%
A6	Add 2p and 1p coins	2p+2p+2p+1p	A	£	60%	56%	4%
A11	Putting single and two digit numbers in order	Order 73, 47, 6, 12, and 55	P		42%	38%	4%
B3	Add single digit to two digit number	44 + 5 = _	A	X	44%	41%	4%
B2	Add single digit number to teens number	12 + 7 = _	A	X	47%	44%	3%
B11	Subtract single digit number from two digit number, without crossing tens	59 - 6 = _	S	X	14%	12%	3%
A15	Number sequence - add 4	Fill in missing number: 4 8 _ 16 20	N		19%	16%	3%
A16	Doubling	Double 20	M		22%	21%	1%
A17	Subtract 10 from a two digit number	10 less than 78	S		9%	7%	1%
B6	Subtract ten from a teens number	16 - 10 = _	S	X	32%	31%	1%
B8		17 - _ = 13	S	B	22%	21%	1%
B7	Subtract single digit from teens number crossing ten	15 - 6 = _	S	X	30%	29%	1%
B4		60 + _ = 68	A	B	27%	27%	1%
B10		_ + 9 = 15	A	B	21%	21%	0%
A19	Place value	Ring hundreds in 129£	P		8%	8%	0%
B12		_ - 10 = 61	S	B	5%	5%	0%
B9	Add 3 single digit numbers	3 + 4 + 8 = _	A	X	39%	39%	0%
A2	Counting - total less than 1£	Count 8 triangles	A		95%	95%	0%
A3	Number line with numbers less than 10	Fill in numbers on number line 1 to 7	N		92%	92%	0%
B13	Multiply two digit number by 3 without carrying	13 x 3 = _	M	X	3%	4%	-1%
A4	Counting two groups - total less than 10	4 dogs and 5 cats. How many altogether?	A	E	91%	93%	-1%
A8	Subtract single digit numbers in a word problem	Subtract 6 from 8	S		31%	33%	-1%
A1	Counting - total less than 1£	Count 5 stars	A		96%	97%	-1%
B14	Divide two digit number by 4 (Table fact)	20 ÷ 4 = _	D	X	5%	6%	-1%
B1	Add single digit numbers	4 + 2 = _	A	X	85%	86%	-2%
A18	Addition of weight	50g and 5g. How many grams altogether?	A	K	21%	22%	-2%
B5	Subtract single digit numbers	8 - 3 = _	S	X	61%	63%	-2%
A5	Comparing heights	Ring the tallest person	L		91%	95%	-3%
A14	Add two single digit numbers in a word problem	7 people on bus and 8 more get on. How many now?	A	E	37%	41%	-4%
A10	Multiplication	5 lots of 2	M		23%	28%	-5%
A9	Multiplication in a word problem	4 x 3	M	E	35%	42%	-7%

National Numeracy Project - June 1998

Year : 1

Cohort: 3

Item Facilities Report							Project - National Difference
Item No.	Mental Test	Mathematical content			Project	National	
11	Addition of time (hours) in word problem	A clock says 4 o'clock. What time in 3 hours?	A	T	22%	19%	3%
8	'I am thinking of a number', single digit	I add 4. My answer is 9. What did I start with?	A	B	16%	14%	2%
12	'Add', using two multiples of 10	Add 60 and 20	A		15%	13%	2%
10	'Write two numbers which add up to...'	Write two numbers which add up to 14	A	O	20%	19%	1%
17	'Take from', using multiples of ten	Take 30 from 80	S		8%	7%	1%
6	'Plus', using 2 single digit numbers	4 plus 6	A		47%	47%	0%
3	'Take away', using single digit numbers	Seven take away five	S		61%	61%	0%
19	'More than'	45 is more than 7 - How many more?	S		1%	1%	0%
16	'Take away' single digit number from teens number	12 take away 4	S		30%	31%	-1%
7	'Taken away', using two digit numbers	What number taken away from 16 leaves 10?	S	B	17%	18%	-1%
18	'Share equally by 4', in a word problem	12 apples. Four children share them equally. How many each?	D	E	7%	8%	-1%
4	Subtract money less than 10p in a word problem	Jill has 8p. She gives 3p to her brother. How much has she left?	S	E	54%	55%	-2%
13	'Share between' 2, in word problem	Share 10 sweets between 2	D	E	27%	29%	-2%
14	'Less than', using single digit numbers	8 less than 9	S		15%	17%	-2%
15	'Times', 2 and 5	2 times 5	M		19%	21%	-2%
2	'Add', using single digit numbers	Three add two	A		74%	77%	-4%
5	'Total', using 3 single digit numbers	What is the total of 2 add 4 add 1?	A		50%	54%	-4%
9	'Write in figures', two digit number	Write in figures the number 67	P		51%	56%	-5%
1	Practice question	One add one	A				

National Numeracy Project - June 1998

Year : 1

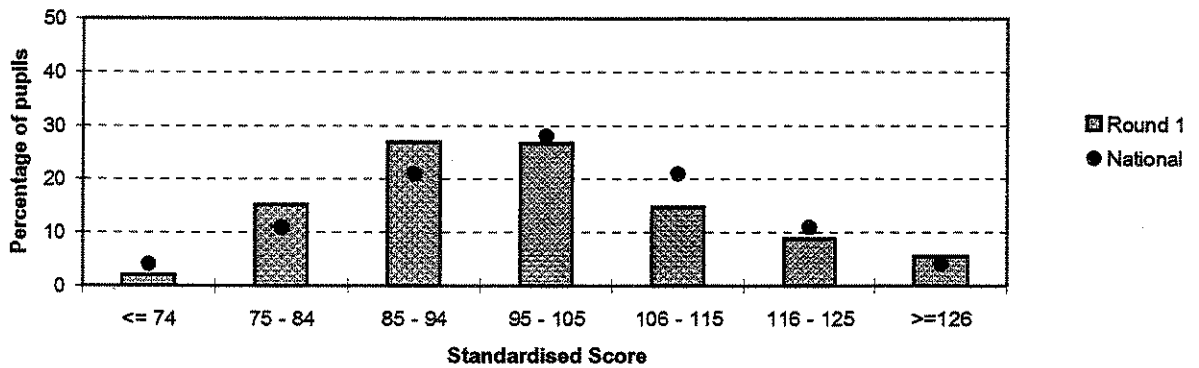
Cohort : 3

Project Level

No. of Round 1 Pupils

10889

Chart 1 : Overall Test Score distribution



The above chart shows the percentage of pupils in the project in the different age-standardised score bands for the first round of testing and compared with the National standardised score distribution. Similar distributions for the written and mental tests are shown below.

Chart 2: Written Test Score distribution

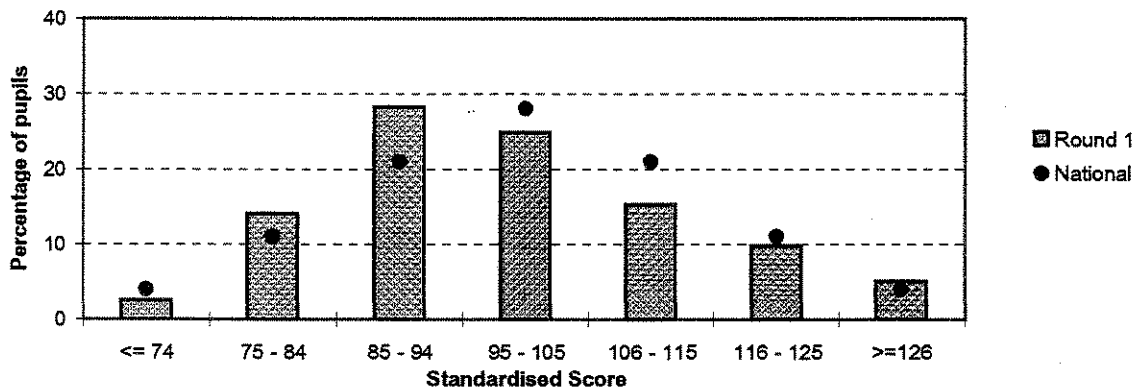
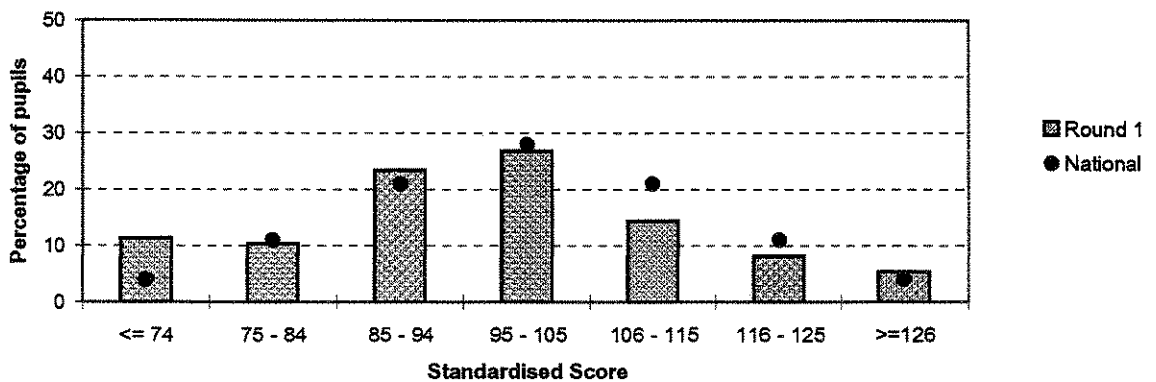


Chart 3 : Mental Test Score distribution



(continued)

National Numeracy Project - June 1998

Year : 1

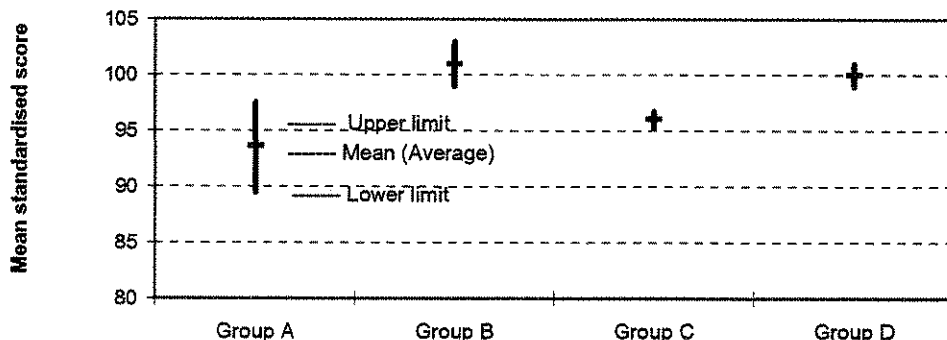
Cohort : 3

Project Level

No. of Round 1 Pupils

10889

Example Chart : Mean scores



The above example shows, for each of four groups, the mean (average) standardised score and an estimate of the "95% confidence band" for each of these mean scores. Such a band means that we can be 95% certain that the mean score lies between the upper and lower limits of the vertical line, as annotated for Group A. If the top of a vertical line is lower than the bottom of another vertical line, then it is likely that there is a real difference between the two groups. If on the other hand the vertical lines overlap, then it is likely that any difference between the two scores is not significant. In this example, the difference between Groups A and B is likely to be real but the difference between Groups B and D is not significant.

Chart 4 : Mean scores for first round of testing

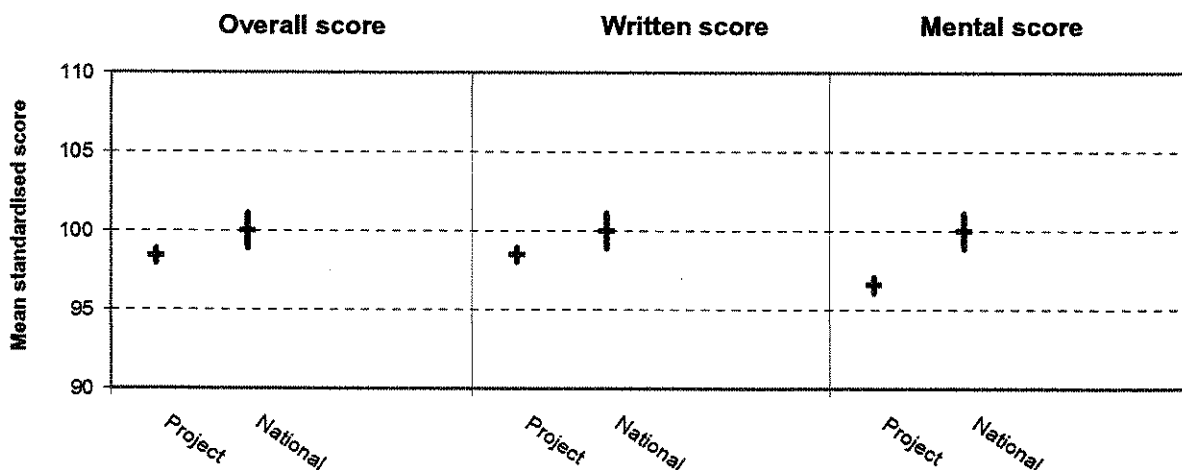


Chart 4 shows the mean (average) score for the project and compares it with the pupils in the schools taking part in the Project as a whole, and the National Standardisation sample.

(continued)

National Numeracy Project - June 1998

Year : 1

Cohort : 3

Project Level

No. of Round 1 Pupils

10889

Chart 5 : Mean project scores for first round of testing

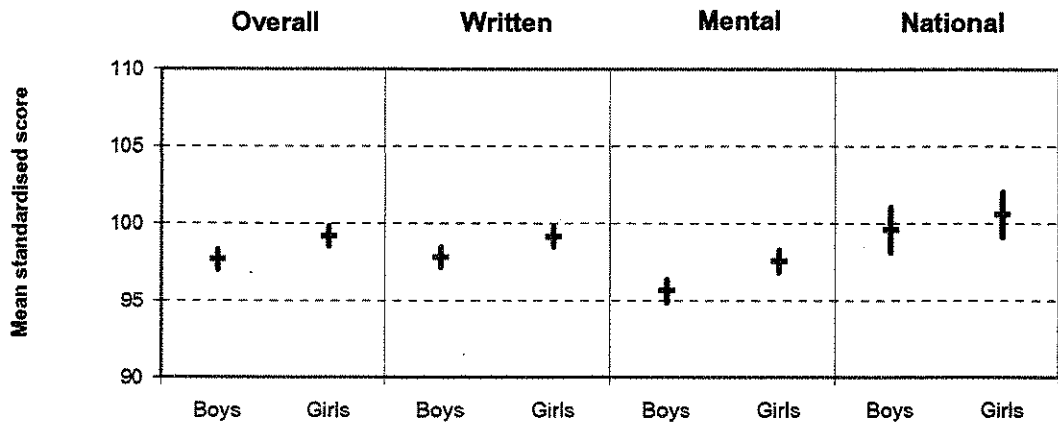


Chart 5 shows the mean (average) score in the project separately for boys and girls and compares it with the National Standardisation sample.

Chart 6 : Mean Standardised scores by term of Birth

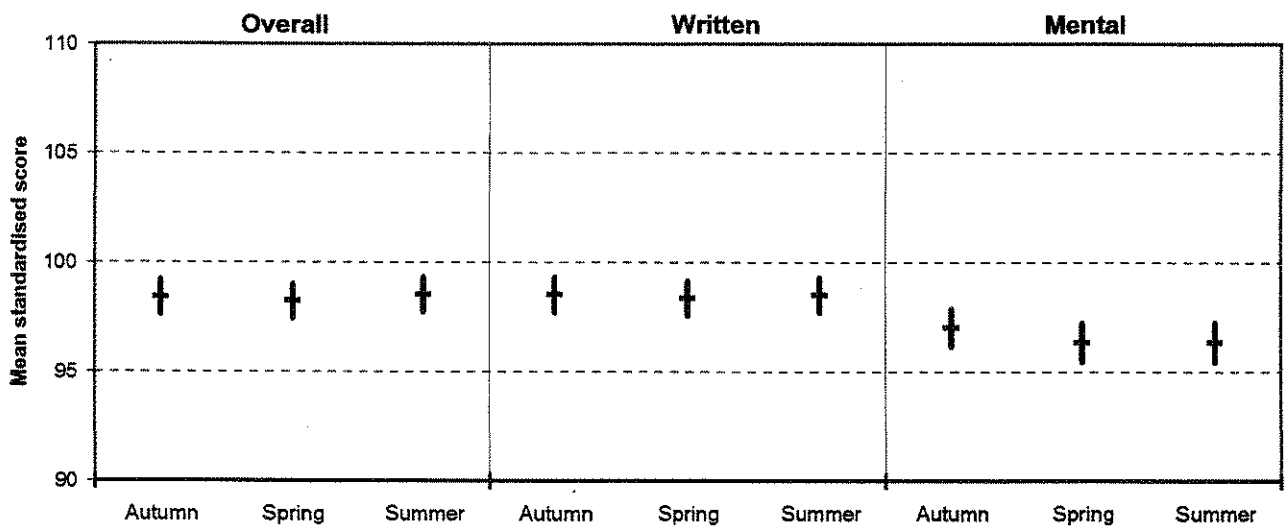


Chart 6 shows the comparison of the mean (average) score of pupils born in the Autumn, spring and summer.

Cohort 3 – Year 2

Contents:

Project Report 1	Standardised scores by background data for project
Project Report 2	Round 1 Standardised scores by LEA
Item Facilities Report	Comparison of % of correct answers for Project with % from National standardisation sample
Chart 1	Round 1 Overall Test Score distribution
Chart 2	Round 1 Written Test Score distribution
Chart 3	Round 1 Mental Test Score distribution
Chart 4	Mean scores for first round of testing
Chart 5	Mean scores for Boys and Girls
Chart 6	Mean scores by term of birth

Project Report 1 - National Numeracy Project - June 1998
Cohort 3 - Year 2 - Mean Entry Standardised Test Scores
Summary by background data- ALL LEAs

		Written		Mental		Overall		No. of pupils absent	Total no. of pupils	Percent of pupils
		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.			
Total		99.7	15.1	100.1	16.4	100.6	15.1	581	11443	100%
Gender	Boys	99.6	15.6	100.5	17.0	100.7	15.6	307	5800	51%
	Girls	99.9	14.5	99.7	15.8	100.5	14.5	273	5637	49%
	Not known	106.0	18.7	101.4	16.7	107.0	19.1	1	6	0%
Ethnic group	White	100.6	15.1	101.2	16.4	101.6	15.2	397	7766	68%
	Black Caribbean	99.8	14.3	100.5	16.0	100.8	14.3	26	527	5%
	Black African	98.2	16.2	97.9	16.6	98.8	15.8	11	317	3%
	Black Other	100.4	14.8	101.3	16.5	101.6	14.7	2	167	1%
	Indian	99.9	14.4	98.8	15.9	100.2	14.3	22	545	5%
	Pakistani	93.7	14.0	94.2	15.5	94.5	13.8	42	851	7%
	Bangladeshi	97.5	13.7	96.3	15.0	97.6	13.4	38	518	5%
	Other	100.2	15.6	99.7	16.8	100.7	15.5	35	674	6%
	Not known	95.3	13.8	96.3	16.9	96.3	14.6	8	78	1%
Receives Free School Meals?	Yes	95.7	14.7	96.3	16.2	96.6	14.7	228	3806	33%
	No	102.0	14.8	102.3	16.1	102.9	14.8	335	7296	64%
	Not known	95.2	14.7	95.6	15.6	95.9	14.6	18	341	3%
Special Educational Needs level	None	103.7	13.6	103.9	15.2	104.5	13.7	398	8574	75%
	Stage 1	90.7	12.2	91.7	14.0	91.5	12.0	57	1087	9%
	Stage 2	86.4	11.5	87.3	13.3	87.2	11.1	63	976	9%
	Stage 3	83.9	12.5	84.7	13.5	84.8	11.8	32	459	4%
	Stage 4 or above	79.6	13.5	80.6	13.5	80.5	12.9	24	213	2%
	Not known	99.2	13.7	101.4	16.6	100.8	14.3	7	134	1%
Stage of Learning English	New to English	86.6	13.4	86.1	13.3	86.7	12.1	14	187	2%
	Becoming familiar with English	91.1	13.1	90.9	14.3	91.5	12.6	43	782	7%
	Becoming confident with English	98.2	13.2	97.9	14.8	98.7	13.0	44	879	8%
	Very fluent in most contexts	102.2	14.3	102.4	15.8	103.0	14.3	32	683	6%
	English first language	100.7	15.1	101.3	16.4	101.7	15.2	438	8888	78%
Not known	96.2	17.6	91.8	16.4	94.8	16.4	10	24	0%	
Received Nursery Education?	Yes	100.3	14.9	100.6	16.3	101.1	14.9	339	7200	63%
	No	100.4	15.2	100.8	16.7	101.3	15.3	93	2004	18%
	Not known	97.4	15.2	97.9	16.2	98.2	15.1	149	2239	20%
No. of terms Primary Education	4 terms or less	94.4	15.1	94.8	16.4	95.2	15.0	30	430	4%
	5	97.4	14.9	96.8	16.0	97.8	14.7	17	450	4%
	6	99.1	14.9	97.8	16.7	99.4	14.9	55	1151	10%
	7	99.7	15.0	99.0	16.6	100.2	15.0	116	1810	16%
	8	100.8	15.1	101.8	16.2	101.9	15.1	276	6281	55%
	9 or more terms	97.7	14.6	98.5	15.8	98.7	14.6	87	1321	12%
KS1 Teacher Assessment level-Number		97.7	15.4	98.3	16.9	98.6	15.5	85	912	8%
	1	84.1	9.9	84.9	11.0	84.8	8.9	103	1791	16%
	2	100.7	11.6	101.0	13.7	101.5	11.7	316	6976	61%
	3	118.2	10.0	118.4	11.5	119.5	9.7	53	1522	13%
	W	75.3	7.1	76.2	9.7	76.5	6.9	24	242	2%
KS1 Mathematics Task/Test level		92.0	16.7	92.3	17.3	92.7	16.2	52	347	3%
	1	84.0	9.4	85.4	11.1	84.9	8.7	103	1743	15%
	2	99.6	12.7	99.5	12.1	100.3	11.9	5	113	1%
	2A	108.8	9.7	109.4	12.1	110.1	9.7	76	1819	16%
	2B	101.7	9.7	102.1	12.3	102.6	9.8	91	2612	23%
	2C	93.7	9.7	93.4	11.8	94.0	9.3	159	2833	25%
	3	118.6	9.9	118.9	11.5	120.0	9.7	60	1652	14%
	A	95.9	13.3	98.2	15.5	97.4	13.9	6	30	0%
	W	75.6	7.4	77.2	9.5	76.9	6.7	29	294	3%

Project Report 2 - National Numeracy Project - June 1998
Cohort 3 - Mean Entry Standardised Test Scores
Summary by LEA

Year Group: 2

	Written		Mental		Overall		No. of pupils absent	Total no. of pupils	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.			
Total	99.7	15.1	100.1	16.4	100.6	15.1	581	11443	
LEA	1	102.6	15.5	101.8	17.0	103.1	15.4	39	727
	2	101.0	15.1	103.7	15.7	102.7	15.0	35	832
	3	100.0	14.7	99.5	15.8	100.4	14.9	15	340
	4	98.9	14.9	100.1	16.0	100.0	14.9	33	700
	5	101.2	15.2	101.3	17.0	102.0	15.4	48	1132
	6	101.9	14.9	101.8	16.2	102.7	14.6	46	506
	7	97.1	14.1	97.3	15.8	97.8	14.3	20	423
	8	97.3	14.1	96.8	16.0	97.8	14.1	36	449
	9	97.6	15.0	98.0	16.0	98.4	15.0	32	726
	10	98.3	14.0	97.1	15.5	98.4	13.7	32	551
	11	100.2	15.4	99.5	16.5	100.7	15.2	42	915
	12	100.3	15.6	101.2	16.7	101.4	15.7	93	1852
	13	97.4	14.9	97.7	16.3	98.2	15.0	59	1126
	14	97.8	14.2	98.3	15.4	98.7	14.4	29	702
	15	103.2	14.1	105.5	15.2	104.8	14.3	22	462

National Numeracy Project - June 1998
Year : 2 Cohort: 3

Item Facilities Report							Project - National Difference
Item No.	Written Test	Mathematical content			Project	National	
17	Doubling	Double 8	M		47%	40%	7%
13	Subtract single digit from two digit number without crossing tens	$87 - 4 = _$	S	X	54%	49%	5%
7	Subtract single digit numbers	$8 - 3 = _$	S	X	83%	78%	5%
34	Place value	Ring hundreds in 1295	P		19%	14%	5%
11		$_ + _ = 28$	A	O	67%	63%	5%
19		$30 - _ = 22$	S	B	42%	38%	4%
20	Add a single to a two digit number, crossing tens	$54 + 9 = _$	A	X	60%	56%	4%
14	'Odd number' recognition	Ring odd numbers in range 18 to 25	N		58%	54%	4%
28		$20 \times _ = 80$	M	B	12%	8%	4%
36	Round to the nearest hundred	357 to the nearest hundred	G		16%	12%	4%
29		$46 \div _ = 23$	D	B	9%	6%	4%
24	Number sequence - add 7	Next number in sequence 14, 21, 28, 35, $_$	N		26%	23%	3%
9	Add 10 to a two digit number	$83 + 10 = _$	A	X	66%	63%	3%
23		$43 - _ = 37$	S	B	34%	31%	3%
16	Add 3 single digit numbers	$5 + 2 + 9 = _$	A	X	74%	71%	3%
26	Multiply by 6 (square numbers - table fact)	$6 \times 6 = _$	M	X	22%	20%	2%
27		$_ - 9 = 7$	S	B	18%	15%	2%
30b	Subtract heights, data handling, read table	How much taller? (Heights in cm)	S	H	14%	12%	2%
22	Read a scale (whole numbers)	Scale numbered in 5s from 0 to 25, read 17	R		33%	31%	2%
10	Add a single digit to a teens number, not crossing 20	$12 + 7 = _$	A	X	75%	73%	2%
30a	Total weight, data handling, read table	Total weight of three children (in kg)	A	H	12%	10%	2%
25	Multiply two digit number by 3, no carrying	$32 \times 3 = _$	M	X	12%	10%	2%
37	Divide three digit by two digit number, in a word problem	How many 25s in 450?	D	E	3%	2%	1%
4	Add single digit numbers	$3 + 6 = _$	A	X	91%	90%	1%
32	Divide 2 digit number by 3, with remainder	$67 \div 3 = _$	D	X	1%	1%	1%
31	Subtract 3 digit number from 200	$200 - 184 = _$	S	X	6%	6%	1%
12	Add numbers less than 20, in a word problem	7 people on a bus. 8 more get on. How many now?	A	E	66%	65%	0%
33	Convert centimetres to millimetres	Millimetres in 11 centimetres	M	L	3%	3%	0%
3	Counting with numbers less than 20	Count 12 birds	C		93%	93%	0%
1	Counting two groups, total less than 10	4 dogs and 5 cats. How many animals altogether?	A	E	97%	97%	0%
35	Volume of rectangular block	Count cubes. $2\text{cm} \times 3\text{cm} \times 4\text{cm}$.	V		4%	4%	0%
5	Add 5p, 2p and 1p coins	$2p + 5p + 1p + 1p = _$	A	£	85%	85%	0%
15	Addition of weight	50g and 5g. How many grams altogether?	A	K	49%	50%	-1%
18	Addition of time (hours)	Read 10:30 on a digital clock. Time is one hour later?	A	T	34%	35%	-1%
6	Comparing heights	Draw a ring around the shortest person	L		91%	92%	-1%
2	Number line with numbers less than 10 (decreasing)	Fill in missing numbers on number line from 9 to 4	N		88%	89%	-1%

National Numeracy Project - June 1998
Year : 2 Cohort: 3

Item Facilities Report						Project - National	
8	Multiplication in a word problem	$3 \times 4 = _$	M	E	53%	57%	-3%
21	Fraction recognition	Recognise a shaded quarter of a circle	F		23%	26%	-4%

National Numeracy Project - June 1998
Year : 2 Cohort: 3

Item Facilities Report							Project - National
Item No.	Mental Test	Mathematical content			Project	National	Difference
8	'Take' single digit from two digit number	Take 6 from 18	S		38%	30%	8%
11	'Write two numbers which add up to...'	Write two numbers which add up to 14	A	O	57%	49%	8%
6	'Altogether' in word problem, multiples of 100	Paula runs 200 metres and then another 300 metres. How far does she run altogether?	A	L	47%	40%	7%
18	'Difference between', teens and single digit number	Difference between 16 and 7	S		18%	13%	6%
4	'Times', 2 and 5	2 times 5	M		52%	47%	5%
14	'Divide by', 2	Divide 16 by 2	D		16%	12%	4%
3	Addition of money, in a word problem	Mark has a 20 pence coin. Vijay gives him 6p. How much has he now?	A	£	66%	61%	4%
12	'Write in figures', three digit number	Write in figures the number 506	P		38%	34%	4%
19	'Add', two digit numbers, crossing tens	28 add 43	A		10%	6%	4%
7	'Share equally among', in a word problem	60p is shared equally among 6 children. How much each?	D	£	36%	34%	3%
15	'Subtract', 30 from two digit number	56 subtract 30	S		12%	10%	2%
16	'Write to the nearest ten', -rounding to nearest ten	Write 93 to the nearest ten	G		14%	12%	2%
5	'How many altogether?', two digit number and 10	How many are 39 and 10 altogether	A		49%	47%	2%
9	Addition of time (hours) in a word problem	Clock says four o'clock. Time in 3 hours?	A	T	44%	43%	1%
17	Multiply money, in a word problem	One toy costs £1.50. How much do three cost?	M	£	8%	7%	1%
13	'I am thinking of a number', two digit numbers	I subtract 20. Answer is 70. What number did I start with?	S	B	10%	9%	1%
1	'Take away', using single digit numbers	7 take away 5	S		76%	75%	1%
2	'Add', using 3 single digit numbers	5 add 3 add 2	A		77%	76%	1%
10	'Take away', 10 from teens number	What number taken away from 16 leaves 10?	S		42%	42%	0%

National Numeracy Project - June 1998

Year : 2

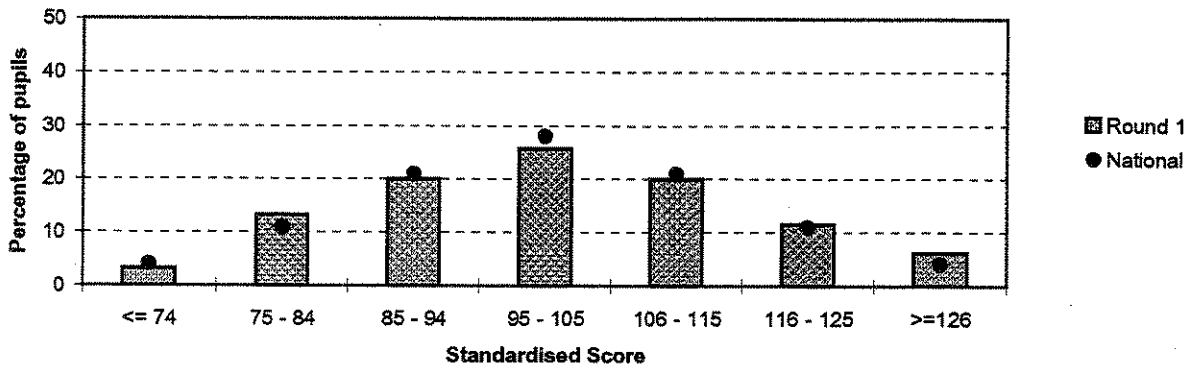
Cohort : 3

Project Level

No. of Round 1 Pupils

10860

Chart 1 : Overall Test Score distribution



The above chart shows the percentage of pupils in the project in the different age-standardised score bands for the first round of testing and compared with the National standardised score distribution. Similar distributions for the written and mental tests are shown below.

Chart 2: Written Test Score distribution

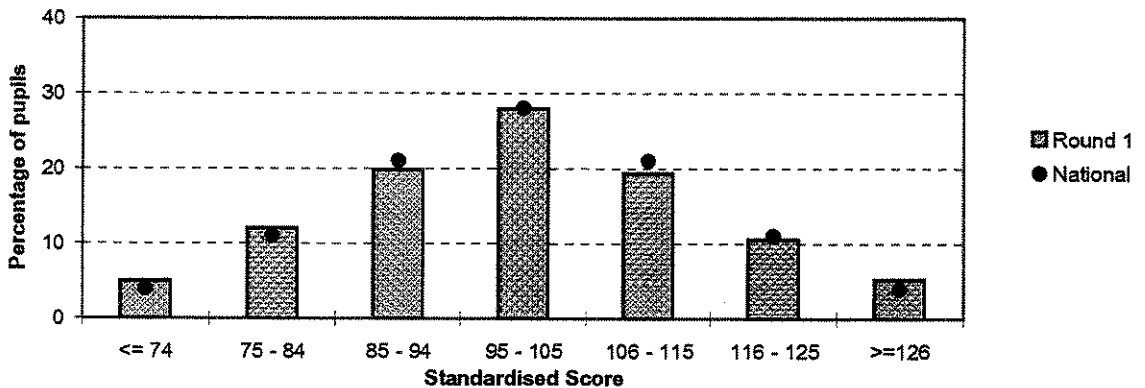
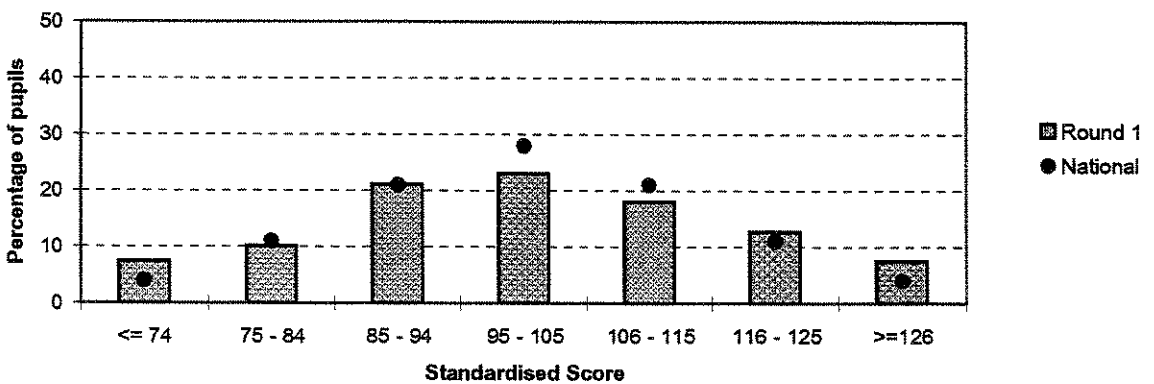


Chart 3 : Mental Test Score distribution



(continued)

National Numeracy Project - June 1998

Year : 2

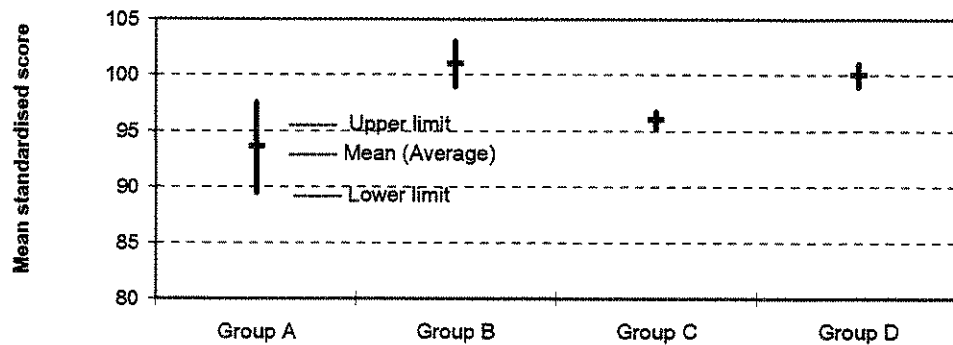
Cohort : 3

Project Level

No. of Round 1 Pupils

10860

Example Chart : Mean scores



The above example shows, for each of four groups, the mean (average) standardised score and an estimate of the "95% confidence band" for each of these mean scores. Such a band means that we can be 95% certain that the mean score lies between the upper and lower limits of the vertical line, as annotated for Group A. If the top of a vertical line is lower than the bottom of another vertical line, then it is likely that there is a real difference between the two groups. If on the other hand the vertical lines overlap, then it is likely that any difference between the two scores is not significant. In this example, the difference between Groups A and B is likely to be real but the difference between Groups B and D is not significant.

Chart 4 : Mean scores for first round of testing

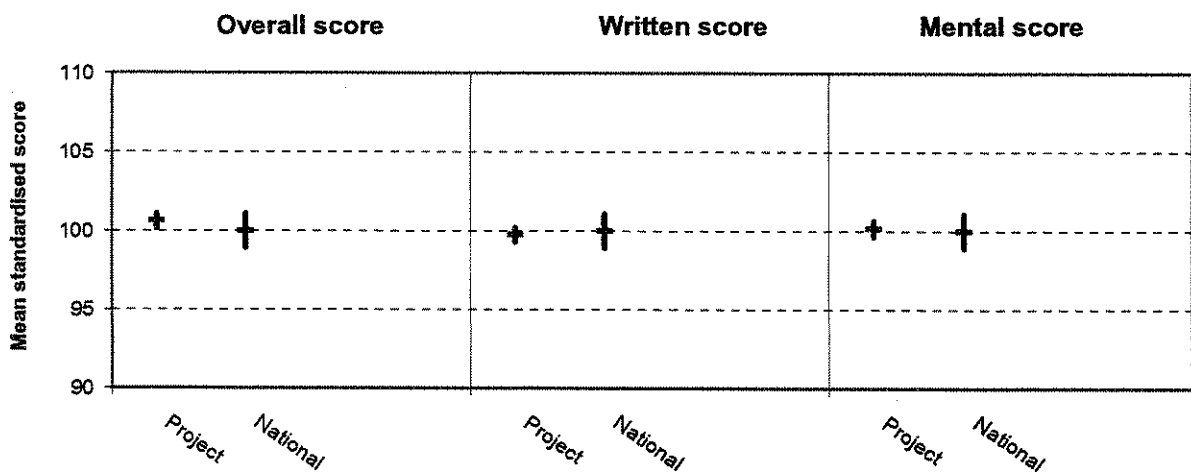


Chart 4 shows the mean (average) score for the project and compares it with the pupils in the schools taking part in the Project as a whole, and the National Standardisation sample.

(continued)

National Numeracy Project - June 1998

Year : 2

Cohort : 3

Project Level

No. of Round 1 Pupils

10860

Chart 5 : Mean project scores for first round of testing

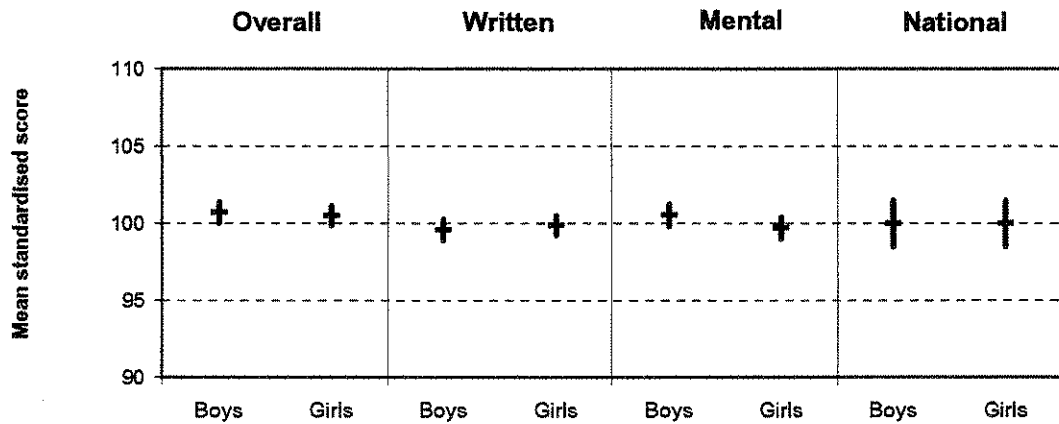


Chart 5 shows the mean (average) score in the project separately for boys and girls and compares it with the National Standardisation sample.

Chart 6 : Mean Standardised scores by term of Birth

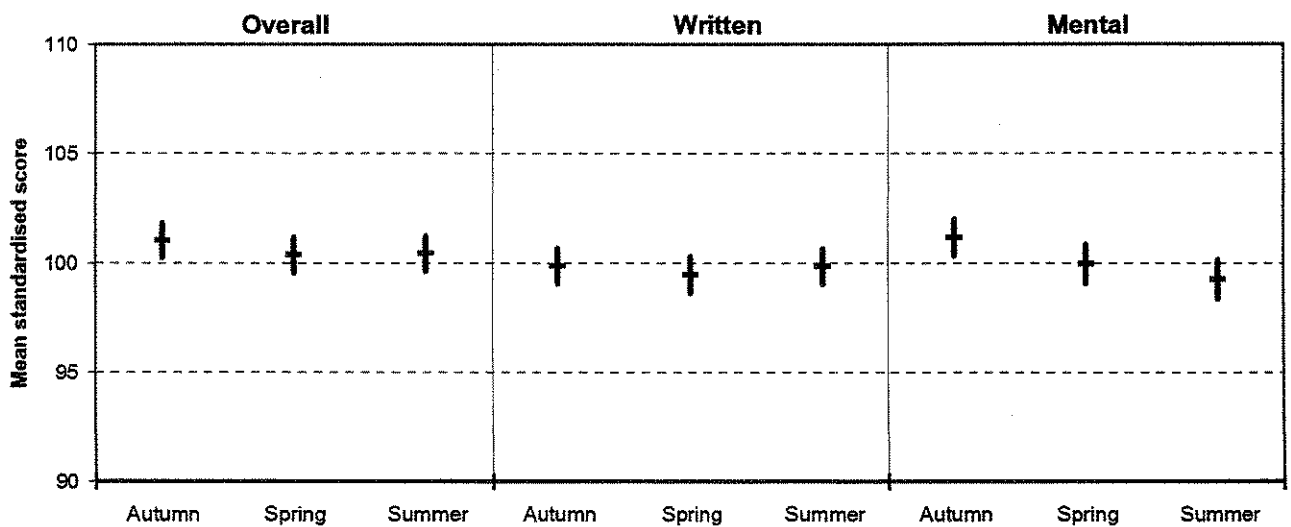


Chart 6 shows the comparison of the mean (average) score of pupils born in the Autumn, spring and summer.

Cohort 3 – Year 4

Contents:

Project Report 1	Standardised scores by background data for project
Project Report 2	Round 1 Standardised scores by LEA
Item Facilities Report	Comparison of % of correct answers for Project with % from National standardisation sample
Chart 1	Round 1 Overall Test Score distribution
Chart 2	Round 1 Written Test Score distribution
Chart 3	Round 1 Mental Test Score distribution
Chart 4	Mean scores for first round of testing
Chart 5	Mean scores for Boys and Girls
Chart 6	Mean scores by term of birth

Project Report 1 - National Numeracy Project - June 1998
Cohort 3 - Year 4 - Mean Entry Standardised Test Scores
Summary by background data- ALL LEAs

		Written		Mental		Overall		No. of pupils absent	Total no. of pupils	Percent of pupils
		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.			
Total		100.0	15.5	100.3	16.0	100.4	15.4	521	10788	100%
Gender	Boys	100.2	15.8	100.7	16.5	100.7	15.9	261	5550	51%
	Girls	99.8	15.1	100.0	15.4	100.1	15.0	259	5236	49%
	Not known	111.0		112.0		112.0		1	2	0%
Ethnic group	White	101.2	15.2	101.2	15.8	101.6	15.2	362	7341	68%
	Black Caribbean	97.7	15.5	99.7	15.6	98.6	15.2	30	544	5%
	Black African	98.0	15.6	100.2	16.3	99.0	15.7	12	298	3%
	Black Other	97.5	13.8	98.7	15.5	98.1	14.1	3	154	1%
	Indian	100.2	15.9	102.1	16.7	101.2	16.0	20	524	5%
	Pakistani	94.8	15.6	96.2	16.2	95.4	15.6	33	767	7%
	Bangladeshi	93.9	14.2	93.9	14.4	94.0	13.9	25	443	4%
	Other	100.1	16.3	100.4	17.1	100.5	16.4	29	623	6%
	Not known	94.5	13.4	95.3	13.3	94.9	13.2	7	94	1%
Receives Free School Meals?	Yes	94.6	14.6	95.2	15.3	94.9	14.6	231	3514	33%
	No	102.6	15.2	102.8	15.7	103.1	15.1	283	7148	66%
	Not known	99.0	17.5	98.3	17.7	99.0	17.1	7	126	1%
Special Educational Needs level	None	104.4	13.8	104.5	14.8	104.9	13.8	338	7894	73%
	Stage 1	90.9	12.4	91.9	12.5	91.2	11.9	61	1052	10%
	Stage 2	87.2	12.5	89.1	13.0	87.7	12.2	55	1019	9%
	Stage 3	83.5	12.6	84.3	12.6	83.5	12.2	35	417	4%
	Stage 4 or above	79.4	12.3	79.9	11.8	79.2	11.8	23	289	3%
	Not known	97.3	13.9	98.6	14.8	98.0	14.0	9	117	1%
Stage of Learning English	New to English	82.0	14.6	81.7	13.3	81.7	13.7	11	112	1%
	Becoming familiar with English	87.2	12.7	88.5	13.2	87.5	12.5	27	505	5%
	Becoming confident with English	95.9	13.9	97.2	14.5	96.5	13.8	40	878	8%
	Very fluent in most contexts	103.2	14.9	104.1	15.8	103.9	14.9	29	826	8%
	English first language	101.1	15.3	101.3	15.8	101.5	15.2	412	8420	78%
	Not known	90.1	16.2	90.0	15.3	90.1	16.1	2	47	0%
No. of terms Primary Education	10 terms or less	92.9	17.4	94.7	17.4	93.7	17.3	20	260	2%
	11	96.7	14.5	97.6	16.2	97.3	14.8	12	275	3%
	12	100.1	15.5	99.6	16.3	100.1	15.4	23	521	5%
	13	100.3	15.0	100.5	15.5	100.6	15.0	53	1180	11%
	14	101.3	15.3	102.0	15.8	101.9	15.2	239	5448	51%
	15 or more terms	98.4	15.7	98.2	16.0	98.6	15.5	174	3104	29%
KS1 Teacher Assessment level- Number		97.7	15.6	98.0	16.0	98.0	15.6	214	3520	33%
	1	86.3	11.2	87.7	11.2	86.6	10.6	78	1487	14%
	2	103.4	12.7	103.6	13.8	103.9	12.6	201	4905	45%
	3	118.1	10.1	117.9	12.5	118.9	10.2	19	761	7%
	W	75.3	8.5	77.2	10.0	75.5	8.2	9	115	1%
KS1 Mathematics Task/Test level		96.3	15.7	96.4	16.0	96.5	15.6	147	2180	20%
	1	85.9	10.8	87.7	11.4	86.3	10.4	77	1506	14%
	2	100.8	12.3	101.7	13.8	101.4	12.2	38	742	7%
	2A	108.4	11.3	108.2	13.0	108.9	11.3	62	1671	15%
	2B	102.2	11.1	102.3	12.5	102.6	10.9	54	1521	14%
	2C	95.5	11.2	96.2	12.2	95.9	10.9	79	1572	15%
	3	116.7	10.8	116.0	13.0	117.3	10.9	45	1363	13%
	A							1	1	0%
W	76.7	8.2	78.3	9.2	76.8	7.8	18	232	2%	

Project Report 2 - National Numeracy Project - June 1998
Cohort 3 - Mean Entry Standardised Test Scores
Summary by LEA

Year Group: 4

		Written		Mental		Overall		No. of pupils absent	Total no. of pupils
		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.		
Total		100.0	15.5	100.3	16.0	100.4	15.4	521	10788
LEA	1	101.6	15.9	103.1	16.9	102.5	16.1	32	690
	2	103.0	14.5	103.7	14.6	103.6	14.3	39	840
	3	100.8	15.6	100.8	15.1	101.1	15.4	15	363
	4	103.5	14.8	102.9	16.0	103.8	14.8	28	598
	5	101.4	15.6	102.8	16.5	102.2	15.8	48	1120
	6	97.5	16.1	99.2	16.7	98.3	16.1	22	486
	7	101.3	15.2	102.0	17.5	101.8	15.9	11	275
	8	97.9	13.7	98.2	14.7	98.3	13.7	37	472
	9	98.1	14.0	97.4	14.3	98.1	13.8	33	615
	10	95.5	14.6	94.4	14.5	95.2	14.2	23	478
	11	100.6	15.9	99.6	16.0	100.5	15.9	47	877
	12	100.0	16.0	100.6	15.9	100.5	15.7	70	1708
	13	97.0	15.6	98.4	16.8	97.7	15.9	65	1164
	14	98.0	15.1	97.0	14.7	97.9	14.7	24	673
	15	103.9	14.2	103.6	14.8	104.4	14.0	27	429

National Numeracy Project - June 1998
Year : 4 Cohort: 3

Item Facilities Report						Project - National Difference	
Item No.	Written Test	Mathematical content			Project		National
21	Fraction recognition (half)	Recognise that half the square is shaded	F		52%	45%	7%
34	Find perimeter of rectangle	Rectangle 14cm x 10 cm. What is the perimeter?	A	I	47%	40%	7%
36	Percentage recognition	What percentage of rectangle is shaded? (50%)	F		20%	14%	5%
40	Number sequence, with negative numbers, subtract 3	Write the next number: 13, 10, 7, 4, 1, _	N		16%	11%	5%
31	Approximate addition of three digit numbers	Best approximation for 897+ 406. 800+400, 950+410, 97+400, 900+400, 800+5	G		28%	23%	5%
30	Division of two digit number by 7, no remainder	$84 \div 7 = _$	D	X	33%	28%	5%
37	Recognise prime numbers	Write a prime number greater than 13	N		13%	9%	5%
27	2 step word problem, involving x and +	3 oranges @ 11p, and 1 pineapple @ 95p	A	E	36%	32%	4%
14	Subtract times (minutes) in word problem	Analogue clock. How long from 1:20 to 1:45?	S	T	56%	53%	4%
16	Order decimal numbers	Arrange from smallest: 3.6, 3.2, 12.9, 0.5, and 2.3	P	F	75%	71%	4%
20	Multiply three digit number by 3 (no carrying)	$103 \times 3 = _$	M	X	48%	45%	3%
43	Divide three digit number by 8, no remainder	$816 \div 8 = _$	D	X	14%	11%	3%
23		$46 \div _ = 23$	D	B	39%	37%	3%
24	Multiply two digit number by 6, with carrying	$95 \times 6 = _$	M	X	18%	15%	3%
26	Numbers divisible by 5 with no remainder	Ring 2 numbers from: 8, 36, 15, 53, 11, 40	N		50%	48%	3%
39	Divide two digit number by 4, with remainder	$93 \div 4 = _$	A	X	12%	9%	3%
45	Multiply a decimal by 10	$7.5 \times 10 = _$	M	F	9%	7%	3%
28	Addition of three digit number, with carrying	$435 + 397 = _$	A	X	47%	45%	2%
11	Estimate to nearest £10	Ring nearest to £10. £10.35, £11.00, £9.91, £10.26, £9.79	G	E	67%	65%	2%
33	Subtract fraction from a mixed number	$1\frac{1}{2} - \frac{1}{4} = _$	S	F	22%	20%	2%
12		$60 - 7 = _$	S	X	69%	68%	1%
47	Multiply two digit numbers	$37 \times 28 = _$	M	X	2%	1%	1%
32	Subtract length (in mm and cm) in a word problem	Cut 36cm from 2m length. How much left?	S	L	16%	15%	1%
38	Subtract four digit number from 3000	$3000 - 1997 = _$	S	X	14%	13%	1%
42b	Finding a percentage of an area	How many cm squares are there in 25% of the grid?	%		6%	5%	1%
44	Percentage of money	What is 75% of £160?	%		4%	3%	1%
19	Division of two digit number by 3, in word problem	24 seeds in 3 rows. Seeds in each row?	D	E	53%	52%	1%
29	Subtraction of three digit number, crossing tens	$354 - 159 = _$	S	X	21%	20%	1%
42a	Finding a fraction of an area	Grid of cm squares is 6cm * 10cm. Half is shaded. How many cm squares are shaded?	I	F	10%	10%	1%
41	Average speed, in word problem	Car travels 120 miles in 3 hours. Average speed?	D	T	12%	12%	1%

National Numeracy Project - June 1998

Year : 4

Cohort: 3

Item Facilities Report							Project - National Difference
Item No.	Written Test	Mathematical content			Project	National	
8		$86 - _ = 67$	S	B	74%	73%	1%
46	Add fractions	$5/8 + 1/4 = _$	A	F	3%	2%	1%
35	Convert centimetres to millimetres	How many millimetres is 11 centimetres?	M	L	19%	18%	0%
5		$_ + _ = 70$	A	O	91%	90%	0%
17	Doubling	Double 17	M		68%	68%	0%
9	Add two digit numbers, crossing tens	$27 + 36 = _$	A	X	73%	72%	0%
10	Add three digit numbers, no crossing	$332 + 514 = _$	A	X	72%	72%	0%
22	Multiply two digit number by 10, in word problem	20 packs, 10 boxes in each. How many boxes? (20×10)	M	E	48%	49%	0%
1	Number line with numbers less than 10 (decreasing)	Missing numbers in sequence 9, 8, 7, $_$, $_$, 4	N		97%	98%	-1%
4	Add 10 to a two digit number	$83 + 10 = _$	A	X	92%	93%	-1%
13	Place value	Ring number with 7 tens. 7, 69, 78, 107, 707	P		61%	62%	-1%
18		$75 - _ = 67$	S	B	57%	58%	-1%
6	Subtract money, in a word problem	Bananas cost 18p. Meera has 6p. How much more does she need?	S	E	80%	82%	-1%
7	Read a graph	Bar charts, scale in ones. Read seaweed	R	H	92%	94%	-2%
2	Read a scale (whole numbers)	Scale numbered in 5s from 0 to 15, read 8	R		79%	81%	-2%
15a	Multiply single digit numbers, in word problem	7 cards of buttons, each with 5 (7×5)	M	E	71%	73%	-2%
25	Read weight from scale	Read 400g from scale 0 to 3 kg - marked every 500g	R		46%	48%	-2%
15b	Two step word problem (+ and -)	2 cards of round buttons & 3 of square	M	E	61%	63%	-3%
3	Subtract single digit numbers, in word problem	Emma has 4 apples & Jane 7. How many more has Jane?	S	E	80%	83%	-3%

National Numeracy Project - June 1998
Year : 4 Cohort: 3

Item Facilities Report							Project - National
Item No.	Mental Test	Mathematical content			Project	National	Difference
12	'Multiplied by itself'	What number multiplied by itself gives 36?	M	B	31%	22%	10%
7	'Write to nearest hundred'	Write 254 to the nearest hundred	G		46%	39%	7%
9	'Write in figures'	Write in figures the number 1072	P		58%	52%	6%
17	'Divide' by 9, no remainder	72 divided by 9	D		24%	18%	6%
13	'Subtract', using two digit numbers	What is 89 subtract 25?	S		28%	23%	5%
21	'One fifth of'	What is one fifth of twenty?	F		21%	17%	4%
16	'Take from'	What must I take from 43 to leave 9?	S	B	17%	13%	4%
19	'Multiplied by' 6	15 multiplied by 6	M		13%	9%	4%
20	'Divide by' 2, no remainder	Divide 16 by 2	D		52%	49%	4%
15	'Divide' by 100, no remainder	Divide 700 by 100	D		26%	22%	4%
14	'Difference'	Write two numbers which have a difference of 12	S	O	19%	16%	3%
18	Multiplication of money, in a word problem	A T-shirt costs £3.95. How much do 2 cost?	A	£	19%	17%	3%
22	'Share equally among' 4	Share 92 equally among 4	D		7%	5%	2%
10	'I take away a number...it leaves...what is the number?'	I take away a number from 81. It leaves 72. What is the number?	S	B	50%	48%	2%
6	'Total' of 4 single digit numbers, with pairs of numbers making ten	What is the total of 8, 3, 7, and 2?	A		60%	59%	1%
2	'Add', using single digit numbers, crossing ten	What is 5 add 9?	A		90%	90%	0%
4	'Lots of' ten	What is 8 lots of 10?	M		84%	85%	0%
8	'More than'	What is 8 more than 72?	A		59%	59%	-1%
3	'How many altogether?', add ten to a two digit number	How many are 39 and 10 altogether?	A		82%	82%	-1%
11	'How many sevens in...?'	How many sevens in 35?	D		43%	44%	-1%
24	'15 percent of'	What is 15% of 200?	F		0%	2%	-2%
5	Multiplication by 5 in a word problem	I have 3 dominoes. Each domino has 5 dots. How many dots altogether on the three dominoes?	M	E	87%	89%	-2%
1	Addition of money in word problem	Mark has a 20p coin. Vijay gives him 6p. How much has he now?	A	£	91%	93%	-2%
23	'Estimate' a division, in a word problem	A pile of 10 coins is 19 millimetres high. Estimate the thickness of one coin	D	G	0%	15%	-15%

National Numeracy Project - June 1998

Year : 4

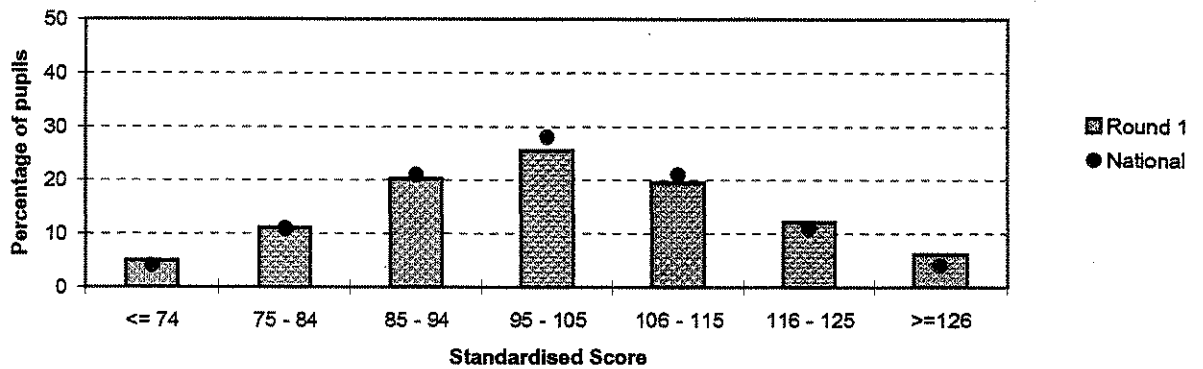
Cohort : 3

Project Level

No. of Round 1 Pupils

10252

Chart 1 : Overall Test Score distribution



The above chart shows the percentage of pupils in the project in the different age-standardised score bands for the first round of testing and compared with the National standardised score distribution. Similar distributions for the written and mental tests are shown below.

Chart 2: Written Test Score distribution

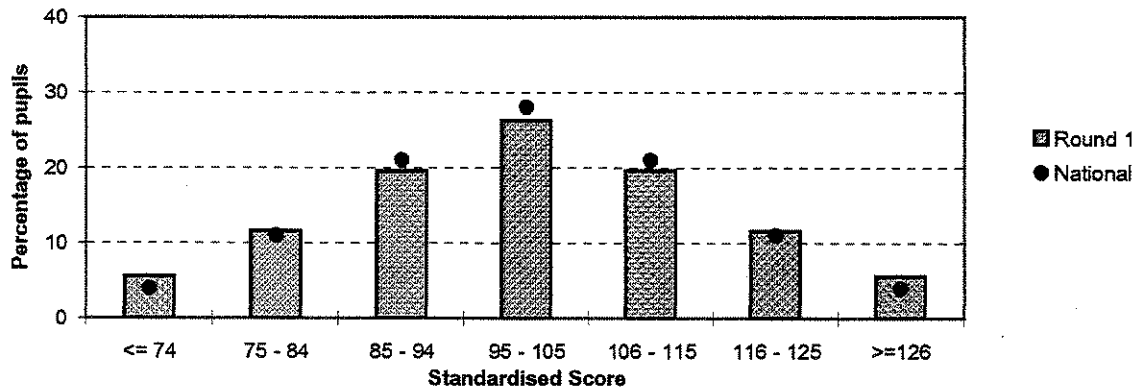
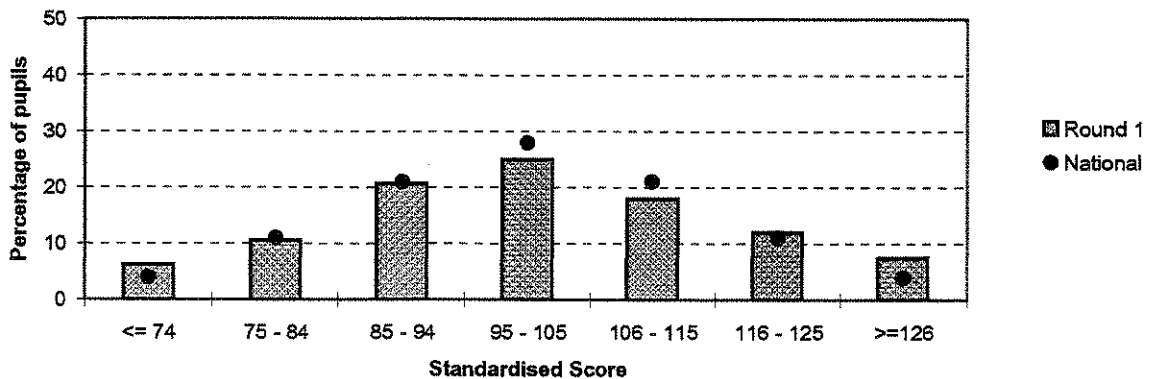


Chart 3 : Mental Test Score distribution



(continued)

National Numeracy Project - June 1998

Year : 4

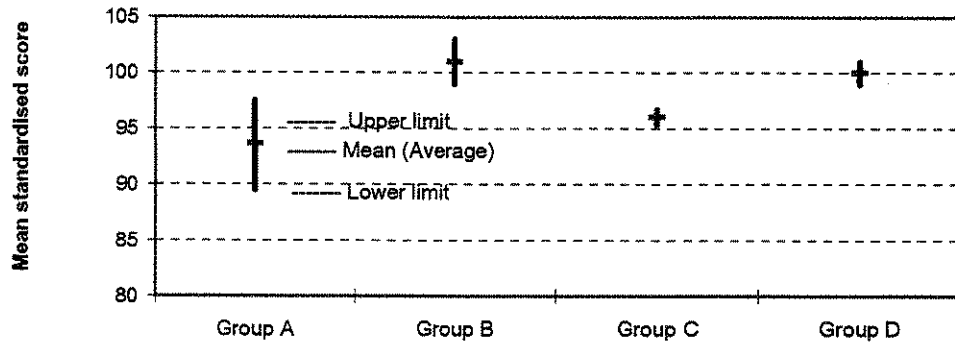
Cohort : 3

Project Level

No. of Round 1 Pupils

10252

Example Chart : Mean scores



The above example shows, for each of four groups, the mean (average) standardised score and an estimate of the "95% confidence band" for each of these mean scores. Such a band means that we can be 95% certain that the mean score lies between the upper and lower limits of the vertical line, as annotated for Group A. If the top of a vertical line is lower than the bottom of another vertical line, then it is likely that there is a real difference between the two groups. If on the other hand the vertical lines overlap, then it is likely that any difference between the two scores is not significant. In this example, the difference between Groups A and B is likely to be real but the difference between Groups B and D is not significant.

Chart 4 : Mean scores for first round of testing

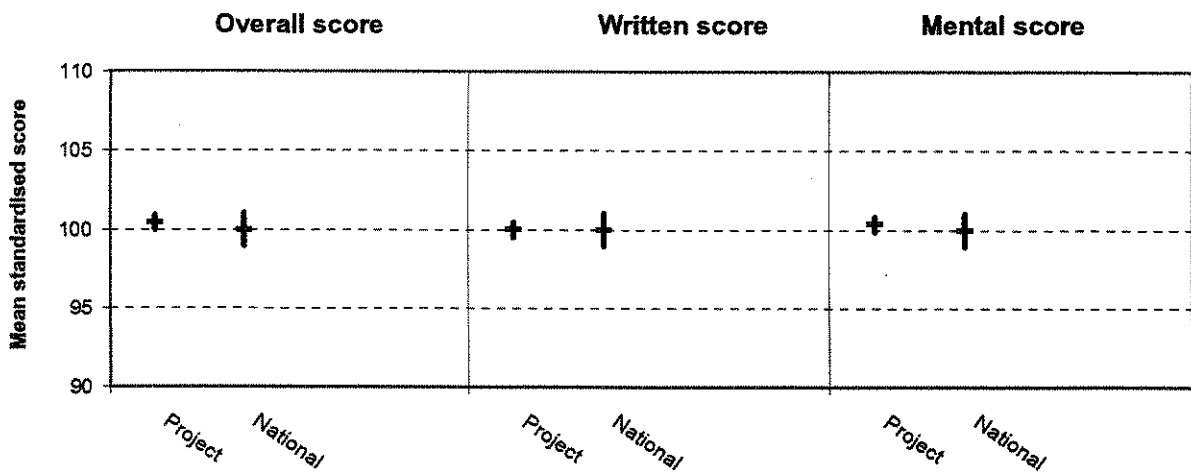


Chart 4 shows the mean (average) score for the project and compares it with the pupils in the schools taking part in the Project as a whole, and the National Standardisation sample.

(continued)

National Numeracy Project - June 1998

Year : 4

Cohort : 3

Project Level

No. of Round 1 Pupils

10252

Chart 5 : Mean project scores for first round of testing

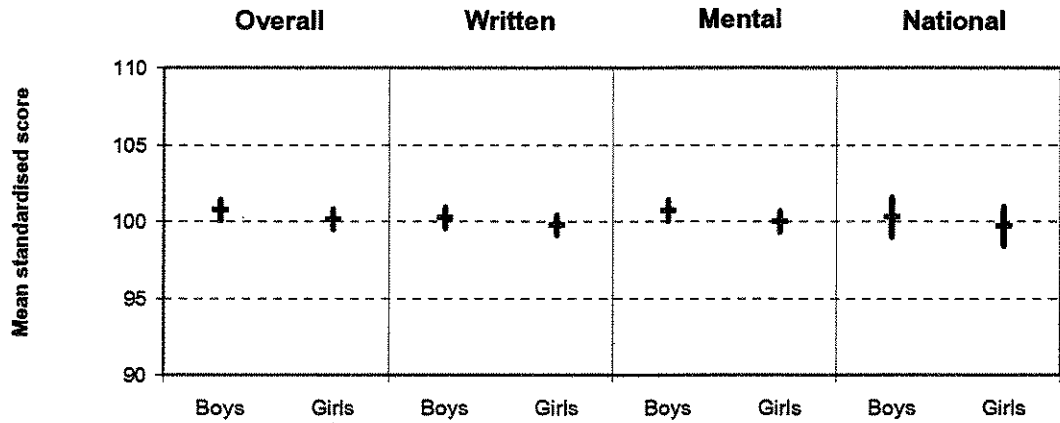


Chart 5 shows the mean (average) score in the project separately for boys and girls and compares it with the National Standardisation sample.

Chart 6 : Mean Standardised scores by term of Birth

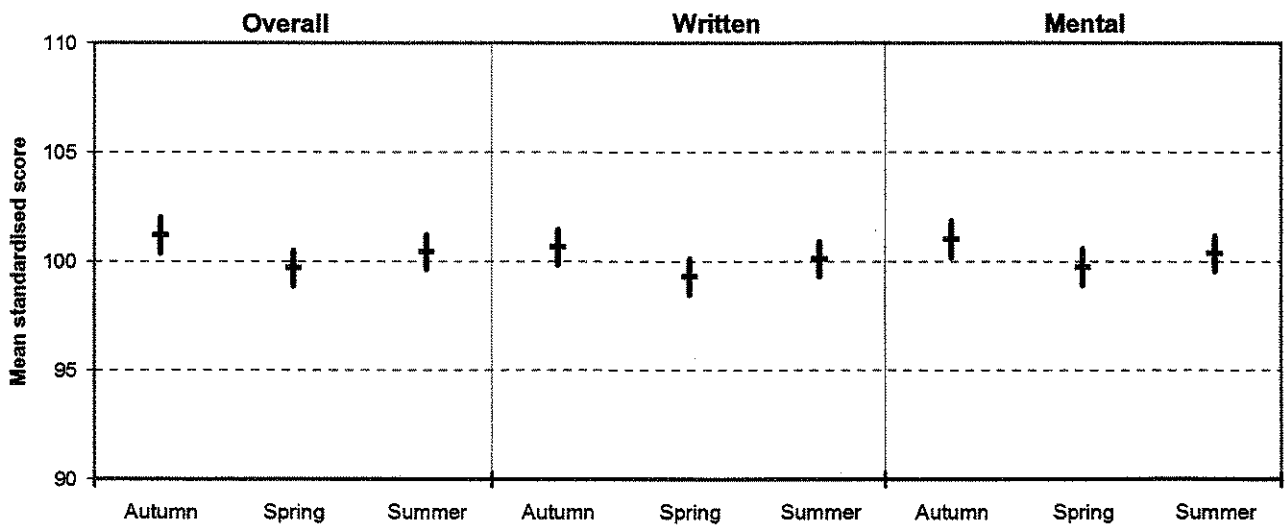


Chart 6 shows the comparison of the mean (average) score of pupils born in the Autumn, spring and summer.

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National Numeracy Project: Technical Report 1998

As part of the evaluation of the National Numeracy Project, a comprehensive testing programme has been organised in participating schools.

Pupils are assessed using specially developed numeracy tests at three separate time points during their school's involvement in the Project so that measures of progress can be calculated. The testing programme has been in place since January 1997 and this report presents the data collected from the programme up until January 1998. The work of the National Numeracy Project is planned to continue until summer 2000.

Analysis of the test results shows that there has been a significant rise in the average age-standardised scores over time. The results have also been analysed in the context of background information to investigate variation in progress between different groups of pupils.

This report contains the entire data set as reported to QCA, the sponsors for the testing programme within the National Numeracy Project, in autumn 1998. It also includes technical details of the statistical analyses carried out on the data with some explanatory text.

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