Report on Research Phase of Every Child Counts – Summer term 2008

Performance Data

Context

In the summer term 2008, five local authorities (50 schools) continued to trial a range of interventions for seven-year-olds with numeracy difficulties - Numeracy Recovery, Maths Recovery or a multisensory approach drawing on the Numicon materials. The implementation of these interventions in LAs and schools was supported through funding for a dedicated local authority lead consultant and dedicated teachers in participating schools; expert training by professionals experienced with the specific interventions and follow up consultancy and support from the trainers, the Primary National Strategy and Every Child a Chance Trust.

In Local Authority A the intervention used was Maths Recovery. Some schools taught children daily and some for three days per week. Most support was on a one-to-one basis but sixteen children were involved in some group work as well as one-to-one teaching.

In Local Authority B the intervention used was a multisensory approach. All schools taught children daily, using two sessions of paired work and three one to one sessions each week.

In Local Authority C the intervention used was Numeracy Recovery. All schools taught children daily, and all teaching was one-to-one. In two schools children were only taught for approximately half the term, as their intensive support teachers went on maternity leave.

In Local Authority D the intervention used was Numeracy Recovery. All schools taught children for three days a week, and all teaching was one-to-one.

In Local Authority E the intervention used was Maths Recovery. Three schools taught children daily and seven schools for three days per week. All teaching was one-to-one.

In Local Authority A the children involved in the summer term had already received the intervention in the spring term; the local authority chose to extend the intervention teaching for these children rather than begin work with a new cohort of children. In Local Authorities B and E children taught in the spring term also continued their lessons for a few weeks into the summer term, so that the new cohort of children had a slightly later start than in Local Authorities C and D, where the intensive support teachers took on their new cohort of children at the start of the summer term.

Data is available on 198 children. 200 children were taught but two were absent when post-testing was carried out. The gain over the period between pre- and post-intervention was assessed using NFER tests, in January 2008 and again in July. The scores were standardised and converted to National Curriculum sublevels. Class teacher assessments of children's National Curriculum sublevels were also collected.

Main Findings

- Children taking part in the ECC programme (all in school Year 2) were initially very low attaining, with average standardised scores of less than 75[1] on an NFER test in January 2008, and an average initial National Curriculum level of just above Level 1c on the same test.
- There have been significant gains made by children receiving intensive support. None of the children taught were initially predicted by their schools to achieve nationally expected levels at the end of KS1 (Level 2+) in July, but on the NFER test 73% of the children involved did so overall, with a range of 53% to 95% in the five local authorities involved. 42% of children achieved Level 2B+ on the test (the level that is a better predictor of achieving the nationally expected Level 4+ at the age of eleven), with a range of 32% to 63% in the five authorities. The mean gain on the NFER test made by the group of children was 2.33 sublevels.
- Class teachers' sublevel assessments also show gains. The mean overall gain was 1.29 sublevels. In all 5 local authorities, the mean sublevel gain is below the mean gain identified from the tests.
- The standard scores from the test results show a mean gain of 14.11 points[2]. In all but one of the 5 local authorities, mean standard scores following intervention had moved into the average attainment range (85 to 115, one standard deviation each side of the test mean of 100).
- All three types of intervention used showed the potential to achieve strong impact, but the impact varied from local authority to local authority, suggesting that variations in the quality of in-school management, and the rigour of the procedures used to recruit teachers with appropriate skills, may be at least as important as the actual intervention used.
- Particularly strong impact was achieved by the multisensory teaching approach.
- Issues remain, as in the spring term's teaching, about the number of sessions missed by children, whether due to child absence, teacher absence or the teacher being assigned by the school to other duties. Here too there is considerable variability between local authorities, with Local Authority D proving particularly successful in combating the factors leading to missed sessions.
- The overall mean gains made by girls and boys are broadly similar across all three measures. While there are some significant differences within the local authorities, for example the teacher assessment in Local Authority C and the standardised scores in Local Authority E, these are not evident across all three measures. The general picture does not support a gender difference and it is encouraging that at this stage in their mathematics education girls and boys make similarly good rates of progress.
- In two of the measures, children born in the period September to December appear to make greater gains than those children born in the period January to March or April to August. This is not the case, however, when the standardised scores are compared. Here the summer-born children make the greatest gains.
- The duration of the intensive support provided varied across and within local authorities. Local Authority A, as has been noted, carried forward the same cohort of children who

[1] This is likely to be an underestimate as a high proportion of children scored below the floor of the test, with a standardised score of less than 70, arbitrarily assigned a value of 69 for averaging purposes

[2] Again, this is a conservative estimate because so many children began below the floor of the test.

had received intensive support in the spring term. This addition to the number of intensive support lessons taught to children in this authority's schools is reflected in the greater gains made by their cohort of children. However, the gains made by Local Authority A's children in the three measures do not indicate that 'double the support yields double the gain'.

- The improvement in attainment made by children within the full cohort show a pattern of increasing improvement as the number of support lessons increases. There are clear improvements in the gains made as the number of taught lessons increases from 15 to 20 and from 20 to 25. This is the case for all three measures. However, the rate of improvement in these gains does not support a straightforward linear model of increase in gains. The scatter graphs indicate that there is some evidence of a significant upward trend in the rate of improvement in the gains made up to the 30 lesson mark and then a greater variation and a flatter profile in the rate after that point. It should be remembered that the summer term is the time when schools carry out statutory assessments of Year 2 children and, in keeping with current national policy, the children in this cohort would have been assessed by their teachers at different times in the term. For all three measures the evidence shows that greatest gains were made following a programme of 30 or more taught lessons, and in the case of Local Authority A, further gains are made when the support is extended over more than one school term.

Evidence Base

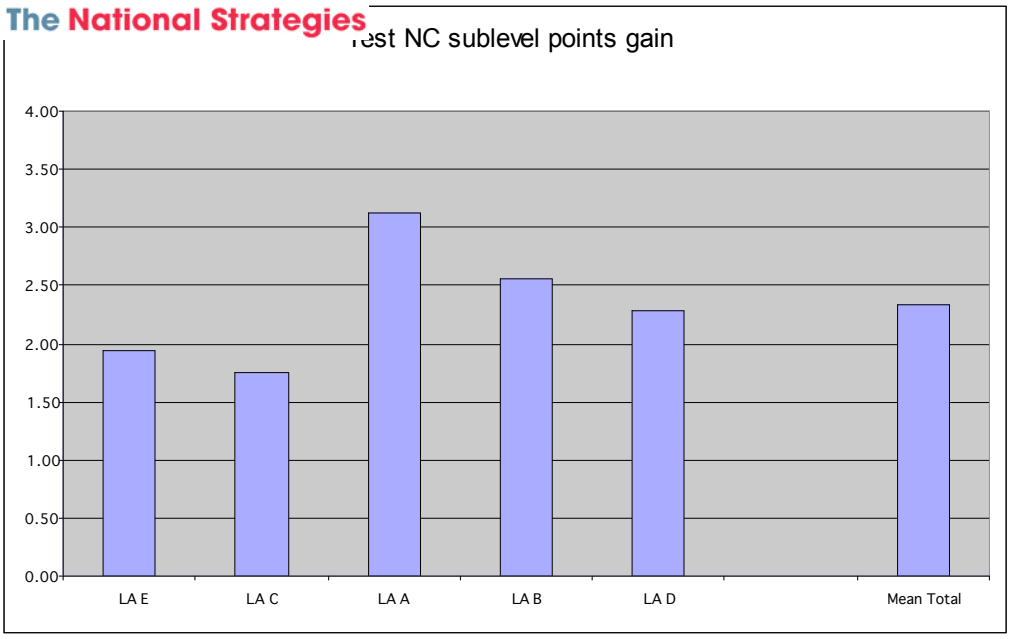
1. Impact headlines

	% of children achieving National Curriculum L2+ at the end of the summer term (NFER test)	% of children achieving National Curriculum L2B+ at the end of the summer term (NFER test)	Average number of intensive support lessons taught per child over summer term	% of available sessions actually taught	Standardised score gain per lesson taught over summer term	Standardised score gain per lesson available
Local Authority A	83	41	44	80%	1.040	0.008
Local Authority B	95	63	27	83%	0.018	0.015
Local Authority C	52	27	31	74%	0.007	0.005
Local Authority D	83	49	24	95%	0.015	0.014
Local Authority E	53	32	16	70%	0.017	0.012
Overall average	**73**	**42**	**28**			

2. Children's starting points and gains in National Curriculum levels (NFER test)

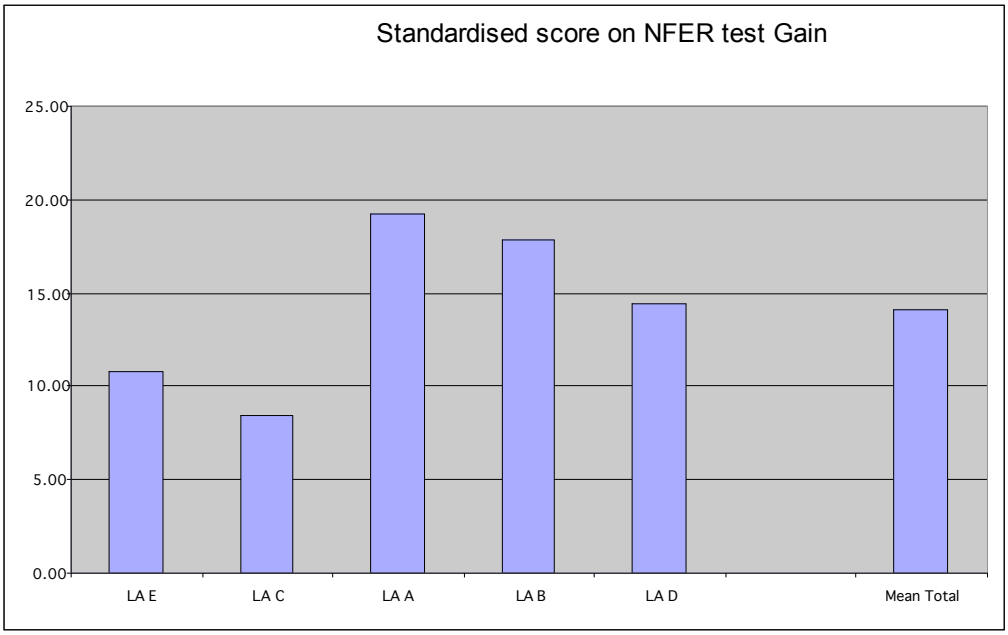
	Mean Test NC sublevel points as at Jan 08*	Mean Test NC sublevel points at exit July 08	Test NC sublevel gain
LA E	1.58	3.53	1.95
LA C	1.63	3.38	1.75
LA A	1.18	4.31	3.13
LA B	2.13	4.69	2.56
LA D	1.98	4.26	2.29
Mean overall sublevel gain **Mean overall sublevel gain for children taught for only one term (LAs B – E)**	**1.70**	**4.04**	**2.33** **2.14**

* Points arbitrarily assigned as Level W = 0 points, Level 1c= 1 point, Level 1b= 2 points, Level 1a = 3 points, Level 2c = 4 points, Level 2b= 5 points, Level 2a= 6 points, Level 3c= 7 points



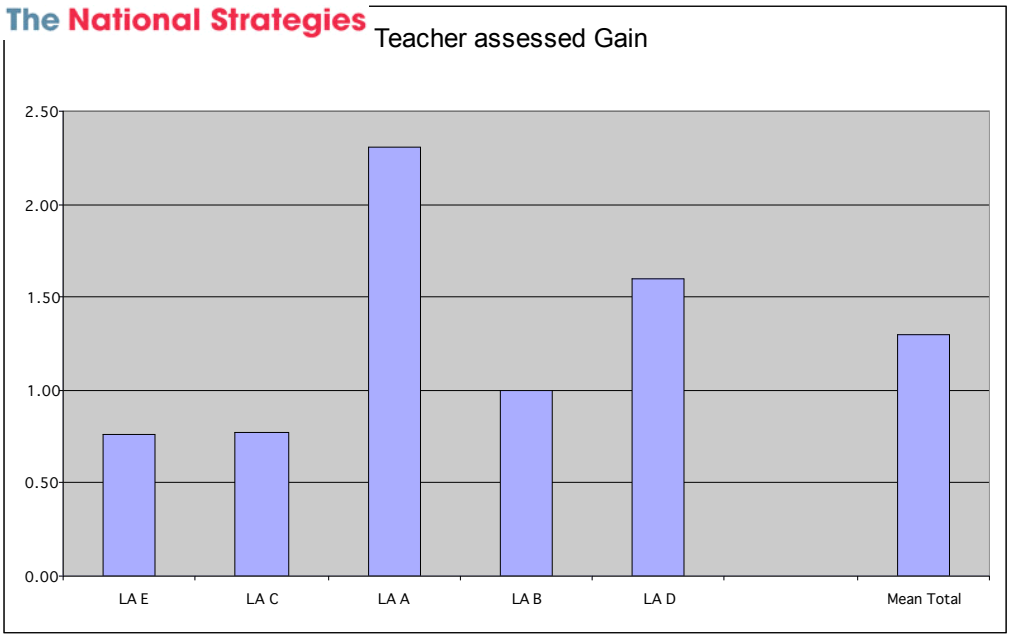
3. Children's starting points and gains as standardised scores (NFER test)

	Average of Standardised scores on NFER test as at Jan 08	Average of Standardised scores on NFER test at exit July 08	Standardised score on NFER test Gain
LA E	75.00	85.84	10.84
LA C	74.60	83.05	8.45
LA A	71.92	91.18	19.26
LA B	77.08	94.89	17.82
LA D	76.43	90.83	14.40
Mean overall **Mean overall standardised score gain for children taught for only one term (LAs B – E)**	**75.03**	**89.13**	**14.11** **12.46**



4. Gains by sublevel from teacher assessment

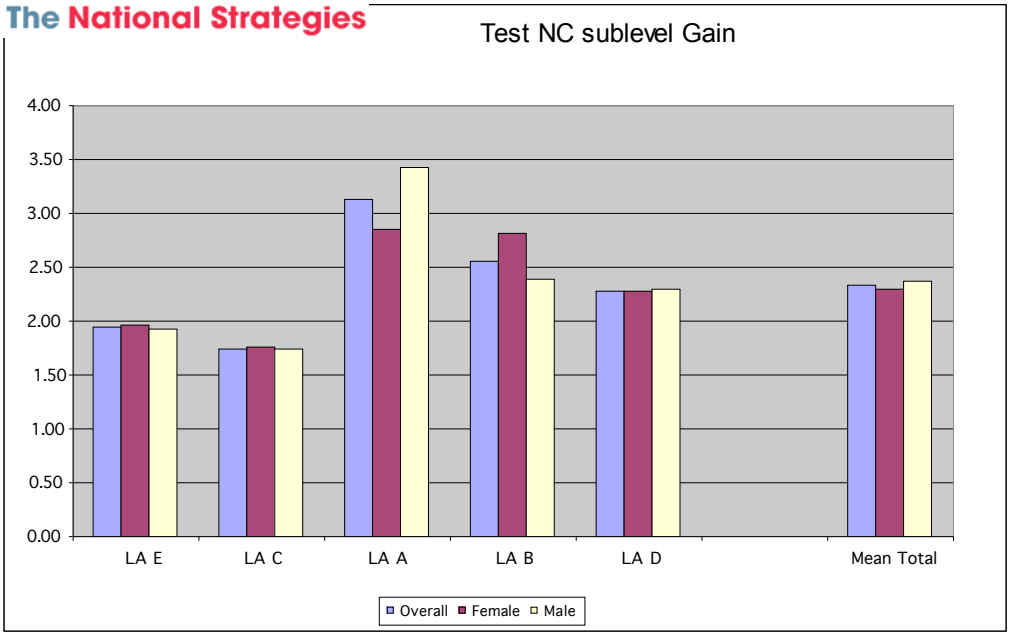
Local authority	**Mean gain**
E	0.76
C	0.78
A	2.31
B	1.00
D	1.60
Mean overall gain	**1.29**
Mean overall standardised score gain for children taught for only one term (LAs B – E)	**1.04**



5. Gender

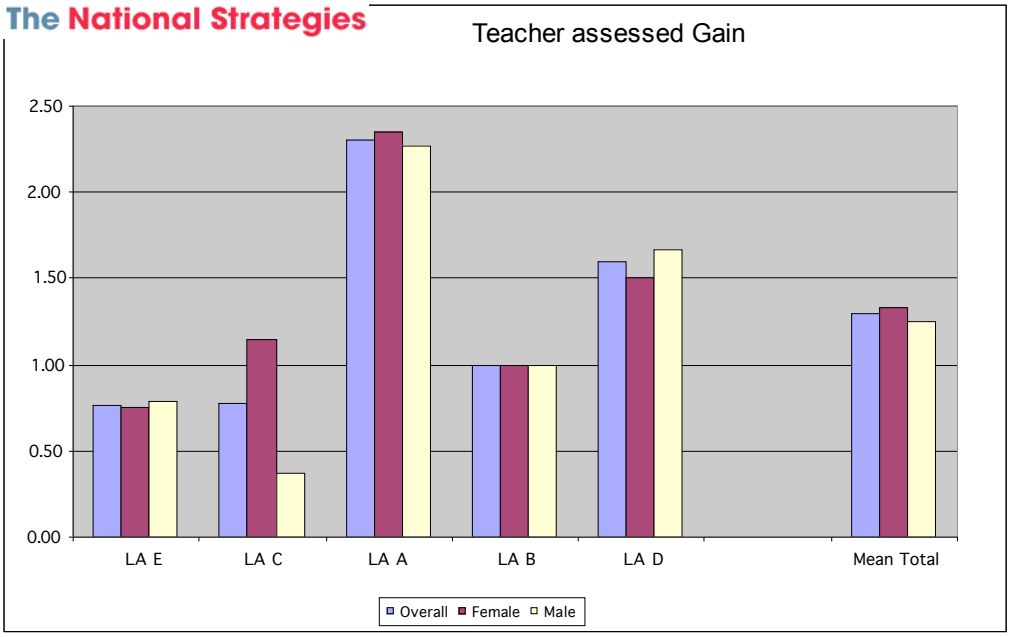
5.1 Gender - gains by sublevel from NFER test

Local authority	Girls mean gain	Boys mean gain
E	1.96	1.93
C	1.76	1.74
A	2.85	3.42
B	2.81	2.39
D	2.28	2.29
Mean overall gain	**2.29**	**2.37**



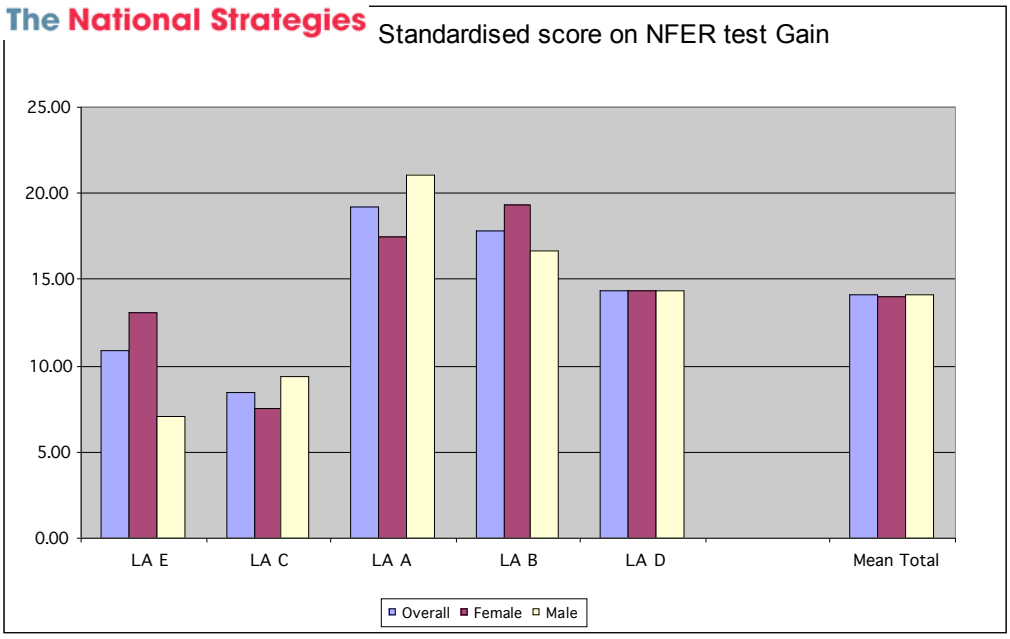
5.2 Gender - gains by sublevel from teacher assessment

Local authority	Girls Mean gain	Boys Mean gain
E	0.75	0.79
C	1.14	0.37
A	2.35	2.26
B	1.00	1.00
D	1.50	1.67
Mean overall gain	**1.33**	**1.25**



5.3 Gender - gains in standardised scores from NFER test

Local authority	Females Mean gain	Males Mean gain
E	13.08	7.06
C	7.57	9.42
A	17.50	21.11
B	19.38	16.68
D	14.33	14.38
Mean overall gain	**14.05**	**14.17**



6. Season of birth

6.1 Gains by sublevel from NFER test

Autumn birth – mean overall gain is **2.63** sublevels
Spring birth – mean overall gain is **2.25** sublevels
Summer birth – mean overall gain is **2.23** sublevels

Local authority	Autumn Mean gain	Spring Mean gain	Summer Mean gain
E	2.14	1.79	2.00
C	2.43	1.79	1.47
A	3.44	2.67	3.58
B	2.50	2.46	2.75
D	2.55	2.56	2.05

6.2 Gains by sublevel from teacher assessment

Autumn birth – mean overall gain is **1.38** sublevels
Spring birth – mean overall gain is **1.22** sublevels
Summer birth – mean overall gain is **1.30** sublevels

Local authority	Autumn Mean gain	Spring Mean gain	Summer Mean gain
E	1.29	0.57	0.71
C	0.43	0.93	0.79
A	2.56	2.00	2.58
B	0.79	0.92	1.33
D	1.82	1.56	1.50

6.3 Gains in standardised scores from NFER test

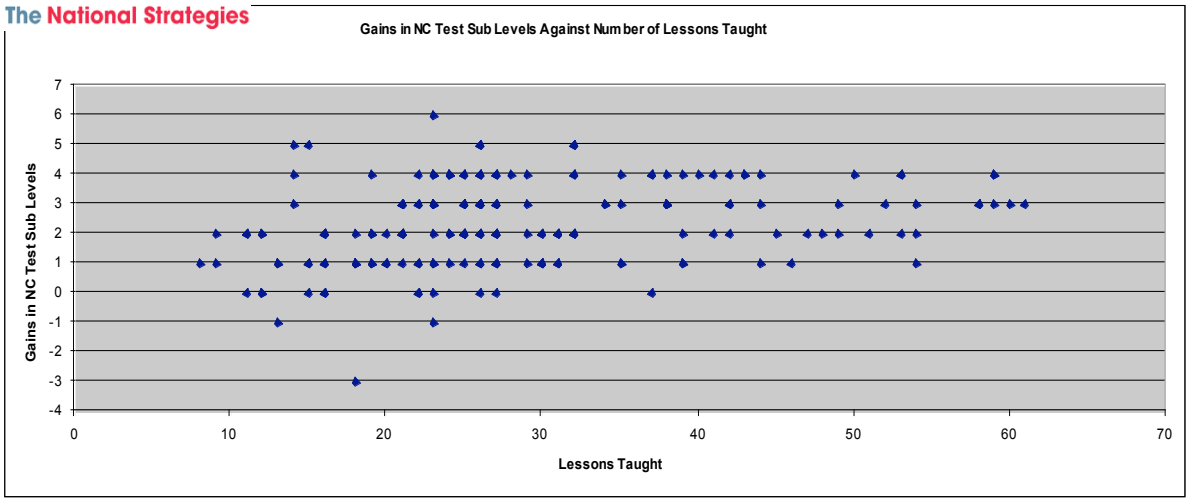
Autumn birth – mean overall gain is **14.02** standardised points
Spring birth – mean overall gain is **12.82** standardised points
Summer birth – mean overall gain is **15.22** standardised points

Local authority	Autumn Mean gain	Spring Mean gain	Summer Mean gain
E	8.12	7.31	14.89
C	11.86	7.21	8.11
A	19.11	16.22	23.92
B	16.53	16.92	20.00
D	12.36	17.00	14.44

7. Lessons taught

7.1 Gains by sublevel from NFER test

Local authority	**Range of lessons taught and mean gains in sublevels**					
	Above 35	**31 to 35**	**26 to 30**	**21 to 25**	**16 to 20**	**Under 15**
E	0.00	0.00	2.00	3.80	1.58	1.67
C	2.08	1.80	2.00	1.17	0.67	1.00
A	3.09	3.75	0.00	0.00	2.00	0.00
B	0.00	3.75	2.23	2.94	0.75	0.00
D	0.00	0.00	0.00	2.41	2.14	1.00
Overall	**2.83**	**3.00**	**2.10**	**2.57**	**1.65**	**1.60**

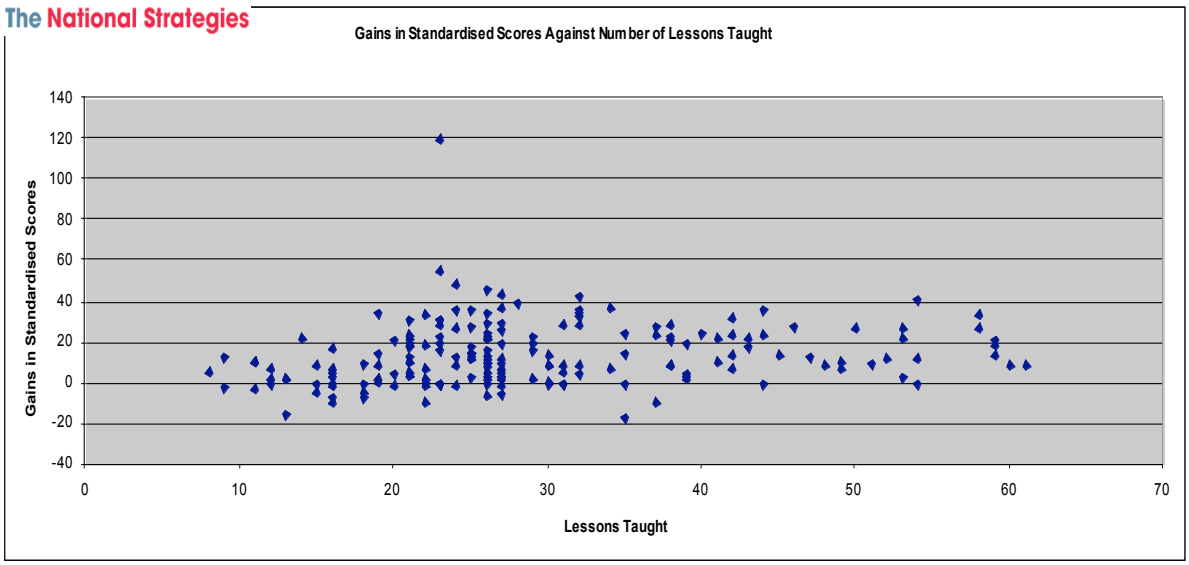


7.2 Gains by sublevel from teacher assessment

Local authority	Range of lessons taught and mean gains in sublevels					
	Above 35	31 to 35	26 to 30	21 to 25	16 to 20	Under 15
E	0.00	0.00	2.00	0.80	0.67	0.61
C	1.17	1.60	2.00	1.83	1.67	1.00
A	2.32	2.25	0.00	0.00	2.00	0.00
B	0.00	0.50	2.23	1.00	1.00	0.00
D	0.00	0.00	0.00	1.67	1.43	2.00
Overall	**2.02**	**1.46**	**0.45**	**1.39**	**1.15**	**0.70**

7.3 Gains in standardised scores from NFER test

Local authority	**Range of lessons taught and mean gains in standardised points**					
	Above 35	**31 to 35**	**26 to 30**	**21 to 25**	**16 to 20**	**Under 15**
E	0.00	0.00	13.33	49.20	3.49	3.86
C	10.08	11.60	12.08	0.50	-1.00	2.00
A	19.06	20.50	0.00	0.00	21.00	0.00
B	0.00	29.25	13.46	20.00	9.33	0.00
D	0.00	0.00	0.00	15.03	13.50	9.00
Overall	16.72	19.77	12.83	18.15	8.30	4.05



8. Local Authority Data

8.1 Local Authority A

Range of lessons taught Season of birth Gender	Mean gain by sublevel from NFER test	Mean gain by sublevel from teacher assessment	Mean gains by standardised score from NFER test	Total of intensive numeracy lessons available to children	Total of intensive numeracy lessons taught to children
Over 35 Lessons	3.09	2.32	19.06	2044	1649
31-35 Lessons	3.75	2.25	20.50	189	136
26-30 Lessons	0.00	0.00	0.00	0	0
21-25 Lessons	0.00	0.00	0.00	0	0
16-20 Lessons	2.00	2.00	21.00	24	20
Under 15 Lessons	0.00	0.00	0.00	0	0
Autumn	3.44	2.56	19.11	554	450
Spring	2.67	2.00	16.22	1043	837
Summer	3.58	2.58	23.92	660	518
Female	2.85	2.35	17.50	1178	948
Male	3.42	2.26	21.11	1079	857
Overall	**3.13**	**2.31**	**19.26**	**2257**	**1805**

8.2 Local Authority B

Range of lessons taught Season of birth Gender	Mean gain by sublevel from NFER test	Mean gain by sublevel from teacher assessment	Mean gains by standardised score from NFER test	Total of intensive numeracy lessons available to children	Total of intensive numeracy lessons taught to children
Over 35 Lessons	0.00	0.00	0.00	0	0
31-35 Lessons	3.75	0.50	29.25	128	128
26-30 Lessons	2.23	1.15	13.46	411	365
21-25 Lessons	2.94	1.00	20.00	570	445
16-20 Lessons	0.75	1.00	9.33	111	77
Under 15 Lessons	0.00	0.00	0.00	0	0
Autumn	2.50	0.79	16.53	428	364
Spring	2.46	0.92	16.92	411	337
Summer	2.75	1.33	20.00	381	314
Female	2.81	1.00	19.38	508	430
Male	2.39	1.00	16.68	712	585
Overall	**2.56**	**1.00**	**17.82**	**1220**	**1015**

8.3 Local Authority C

Range of lessons taught Season of birth Gender	Mean gain by sublevel from NFER test	Mean gain by sublevel from teacher assessment	Mean gains by standardised score from NFER test	Total of intensive numeracy lessons available to children	Total of intensive numeracy lessons taught to children
Above 35 lessons	2.08	1.17	10.08	518	488
31to 35 lessons	1.80	1.60	11.60	214	168
26-30 Lessons	2.00	-0.62	12.08	542	381
21-25 Lessons	1.17	1.83	0.50	246	138
16-20 Lessons	0.67	1.67	-1.00	60	54
Under 15 Lessons	1.00	1.00	2.00	20	13
Autumn	2.43	0.43	11.86	295	213
Spring	1.79	0.93	7.21	570	450
Summer	1.47	0.79	8.11	735	579
Female	1.76	1.14	7.57	867	675
Male	1.74	0.37	9.42	733	567
Overall	**1.75**	**0.78**	**8.45**	**1600**	**1242**

8.4 Local Authority D

Range of lessons taught Season of birth Gender	Mean gain by sublevel from NFER test	Mean gain by sublevel from teacher assessment	Mean gains by standardised score from NFER test	Total of intensive numeracy lessons available to children	Total of intensive numeracy lessons taught to children
Over 35 Lessons	0.00	0.00	0.00	0	0
31-35 Lessons	0.00	0.00	0.00	0	0
26-30 Lessons	0.00	0.00	0.00	0	0
21-25 Lessons	2.41	1.67	15.03	692	665
16-20 Lessons	2.14	1.43	13.50	305	288
Under 15 Lessons	1.00	2.00	9.00	25	15
Autumn	2.55	1.82	12.36	277	266
Spring	2.56	1.56	17.00	203	198
Summer	2.05	1.50	14.44	542	504
Female	2.28	1.50	14.33	432	403
Male	2.29	1.67	14.38	590	565
Overall	**2.29**	**1.60**	**14.40**	**1022**	**968**

8.5 Local Authority E

Range of lessons taught Season of birth Gender	Mean gain by sublevel from NFER test	Mean gain by sublevel from teacher assessment	Mean gains by standardised score from NFER test	Total of intensive numeracy lessons available to children	Total of intensive numeracy lessons taught to children
Over 35 Lessons	0.00	0.00	0.00	0	0
31-35 Lessons	0.00	0.00	0.00	0	0
26-30 Lessons	2.00	2.00	13.33	105	81
21-25 Lessons	3.80	0.80	49.20	155	118
16-20 Lessons	1.58	0.67	3.49	261	202
Under 15 Lessons	1.67	0.61	3.86	366	220
Autumn	2.14	1.29	8.12	167	125
Spring	1.79	0.57	7.31	342	242
Summer	2.00	0.71	14.89	378	254
Female	1.96	0.75	13.08	593	419
Male	1.93	0.79	7.06	294	202
Overall	**1.95**	**0.76**	**10.84**	**887**	**621**