



OFFICE FOR STANDARDS
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The Key Stage 3 Strategy: *evaluation of the first year of the pilot*

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Introduction

The Key Stage 3 strategy

1. This report covers the first year of the pilot of the national strategy for Key Stage 3 mounted by the Department for Education and Skills (DfES) and supported by a national team.

2. The aim of the strategy is to raise standards by strengthening teaching and learning, developing cross-curricular skills such as literacy and numeracy and helping pupils who come into Year 7 below level 4 to make faster progress.

3. The strategy is based on four key principles:

- *expectations*: establishing high expectations for all pupils and setting challenging targets for them to achieve;
- *progression*: strengthening the transition from Key Stage 2 to Key Stage 3 and ensuring progression in teaching and learning across Key Stage 3;
- *engagement*: promoting approaches to teaching and learning that engage and motivate pupils and demand their active participation;
- *transformation*: strengthening teaching and learning through a programme of professional development and practical support.

The pilot

4. The pilot began in April 2000 and will run until March 2002 and involves 205 secondary schools in 17 volunteer local education authorities (LEAs): Barking and Dagenham, Brighton and Hove, the City of Bristol, Cheshire, Gateshead, Gloucestershire, Greenwich, Hertfordshire, North Lincolnshire, Nottinghamshire, Reading, Salford, Solihull, Staffordshire, Tower Hamlets, the City of Wakefield and the City of York.

5. The pilot consists of several strands. Action on two of the strands, the teaching of English and the teaching of mathematics, was expected from September 2000 in all the pilot schools, with preparatory work undertaken in the summer term. To support this action:

- schools were given funding, in addition to the main funding allocated for the pilot, to organise a summer school in 2000 in literacy or numeracy and were expected to follow up the progress of pupils who attended;

- the teaching of English and mathematics was to be based on the draft frameworks provided, where appropriate making use of a recommended three-part lesson structure (a starter activity, a main activity and a concluding plenary), and to include focused provision for pupils who are at National Curriculum level 3 at the end of Key Stage 2;
- targets for improved attainment were to be set, with progress towards them measured through tests at the end of Year 7 and 8;
- work on the use and development of literacy and numeracy in other subjects, with training to assist in these respects, began in autumn 2000 with school-based training in cross-curricular literacy, and with schools expected to run training on cross-curricular numeracy from spring 2001.

6. Other strands of the pilot cover science, information and communication technology (ICT) and the improvement in teaching and learning in other foundation subjects and religious education (the 'TLF' strand).

7. The funding to pilot schools in the first year covered training and other approved activities from an 'additional menu', for example to improve transfer and transition from primary schools. The funding could be used to help teachers to carry out audits of provision and to plan a 'catch-up' programme for pupils to reach level 4 in English and mathematics as soon as possible.

8. LEAs nominated Key Stage 3 strategy managers and appointed consultants for English/literacy and mathematics/numeracy to assist the pilot schools.

9. Senior staff and selected teachers in the pilot schools received briefing and training on the overall strategy and on the English and mathematics strands in the summer and autumn of 2000.

10. Training for schools in science began in summer 2001. During the summer term of 2001, LEAs ran training in teaching and learning in other subjects for selected teachers, typically from two departments in the school and the senior management team. Training on the ICT strand began in summer 2001.

The evaluation

11. The report focuses on developments in the first year of the pilot in the teaching of English and mathematics, which were the main areas in which action was expected in the schools.

12. Visits were made to summer literacy and numeracy schools in secondary schools that were involved in the pilot. Commentary on them is given in annexes to the sections on English and mathematics.

13. HMI attended introductory training sessions in summer and autumn 2000 and other training throughout the year. They visited a total of 64 schools across the three terms of the pilot in the 17 LEAs involved. Half of the schools were visited twice. The sample of schools reflected the full range of performance at Key Stage 3 measured by test results in all core subjects in recent years.

14. The visits concentrated on either English or mathematics, while seeking information on other developments in the schools. Discussions were held with key personnel, plans were scrutinised, lessons were observed and pupils' work was examined. Discussions were also held with consultants and others in LEAs to gain updates on progress in the schools.

Main findings

The outcomes of the first year of the pilot

- The great majority of the pilot schools welcomed the pilot of the Key Stage 3 strategy and have responded well to it. Important lessons have been learned from the pilot and modifications of the strategy made as a result.
- At this early stage, the strategy is beginning to make a difference to the teaching of English and mathematics in the pilot schools. Improvements in teaching over the year were substantial in nearly a third of the schools visited, sound in over half and minimal in the remainder.
- There were positive effects on pupils' attainment but these were not comprehensive or consistent, especially in relation to those pupils achieving below the expected level when they join secondary school. The results of the progress tests taken by these pupils at the end of Year 7 were disappointing.

The management of the pilot

- The short lead-in to the start of the pilot in September 2000 meant that preparation time for the schools was limited. They did not have enough information at the outset on all the elements of the pilot to plan an overall approach effectively. Helpful clarification and further materials and guidance were provided during the year and management by the schools improved.
- The quality of the management of the pilot varied widely in the schools at the start. In some, too great an expectation was placed on individual teachers to plan, co-ordinate and prepare the work and this problem persisted in some cases through the year. By the end of the first year of the pilot, management was judged good or better in over two-fifths of schools and satisfactory in over two-fifths, but unsatisfactory in over one in ten. Monitoring remained a common weakness.
- Despite the shortage of time and, in some schools, serious staffing difficulties, preparations for the immediate changes needed in the teaching of English and mathematics in Year 7 were, in the main, adequate. However, a key part of the wider preparations, the subject audit, was not well done.

- The response to the training about English and mathematics was positive, despite the difficulties some schools had in releasing teachers to attend it. The pilot frameworks for the teaching of the subjects were a sound basis for planning and the accompanying guidance on teaching has been welcomed and useful.

Transition

- A problem highlighted by the pilot is the inadequacy of the transfer and use of information from primary schools. The availability and use of data in the autumn term were judged unsatisfactory in over half the schools. The effects were felt throughout the year, but better arrangements for 2001/02 were in prospect in some schools.
- Assessment, including its use in target-setting, was a common weakness in both English and mathematics departments. However, the pilot has raised awareness of what needs to be done in this respect.

English

- The work on English and literacy across the curriculum started slowly in a quarter of the schools. By the end of the year many schools revisited had made considerable progress, especially in relation to mainstream English lessons in Year 7, so that implementation of the pilot was at least sound in all but two schools and was good in over a third. Problems mainly related to weak leadership or staffing difficulties, which made it hard to maintain continuity and impetus and to make best use of the training.
- In English lessons the use of a three-part lesson structure brought benefits in Year 7, and sometimes in Year 8, in planning, organisation and pace. There were improvements in the setting of objectives, the part played by starter activities and the use of equipment. Plenary sessions remained the weakest element.
- By the end of the year, there were signs in several of the schools visited of a new or renewed enthusiasm to tackle literacy as a school-wide issue, including in relation to bilingual learners. Some schools built on existing good practice. Others had a long way to go, in part because of limited use of extended reading and writing tasks. Libraries remained under-used.

- The use of the materials provided to help pupils at level 3 in English to catch up was disappointing. There were problems of organisation at the start which were not resolved by most schools. The use of the materials, remained unsatisfactory in two-fifths of schools.
- Improvements in attainment were most evident in word- and sentence-level work, with improvements in text-level work being less distinct. Overall, progress in Year 7 was greater for pupils at levels 3 and 4, who form the majority, than for others. Results in the progress tests taken by Year 7 pupils varied greatly from school to school. In a few of the schools visited, nearly half the eligible pupils reached level 4. The average was just less than a quarter. There was a common concern about the match between the progress tests and the work done by pupils in Year 7.

Mathematics

- The great majority of schools made substantial progress from the autumn term, when the quality of implementation varied considerably. Difficulties with the recruitment and retention of staff hampered progress in about half the schools in which mathematics was the focus of visits.
- The strategy has had a positive influence on planning and teaching methods. The framework promoted higher expectations, with work pitched at a higher level and covered at a faster pace. A three-part lesson structure proved helpful; starter activities were generally successful, but plenary sessions less so. Greater use of interactive teaching improved the quality of oral work.
- School-based training on numeracy across the curriculum was patchy. It inspired productive discussion in the schools where it took place. Development in this respect has not been a high priority for most schools.
- The use of materials to help pupils at level 3 to catch up improved through the year, but, overall, it was erratic and did not take sufficient account of the particular weaknesses displayed by pupils. It remained unsatisfactory in a third of the schools.
- The strategy has had a positive impact on attainment in most schools. There were improvements in arithmetical skills and oral work. Lower-attaining pupils, particularly in schools where a relatively large number entered Year 7 at level 3 or below, made less progress than higher-attaining pupils. Results in the progress tests taken by Year 7 pupils showed that few of the eligible pupils reached level 4 by the end of the year. The average for the schools visited was under one in ten. Many teachers felt that the tests were too difficult and did not sufficiently match the work done by pupils in Year 7.

Summer schools

- The summer schools associated with the pilot Key Stage 3 strategy and visited in summer 2000 generally made good use of the national materials and, overall, the summer schools were better than in previous years. Not enough work was pitched at a high enough level in the numeracy schools, but good discussions enhanced response and promoted progress. There was not enough attention to writing in the literacy schools.
- Some of the summer schools had serious problems with recruitment. The availability of information from primary schools on the pupils involved was uneven. The high ratio of adults to pupils was not always advantageous, but the involvement of primary teachers was a positive factor. The majority of secondary schools did not have clear plans to follow up pupils' progress - a feature reflected in the pilot strategy schools visited in the autumn term.

The role of LEA staff

- The initial training provided by LEAs, using national materials, was well received. Thereafter, LEA consultants, who were often new to the role, and sometimes LEA advisers, helped schools to refine their plans for the pilot and often contributed well to training in schools. They also helped directly with classroom practice, but not as much as was needed in some cases.
- By the end of the year the contribution of LEA support was satisfactory overall. It was somewhat stronger in English than in mathematics.

Issues for attention

- In the further implementation of the pilot and the strategy nationally it is important that:
 - communication with schools gives adequate time for them to prepare for any further changes in organisation and practice;
 - advice on implementation is tailored to the different circumstances of schools and takes full account of the difficulties some schools have in recruiting mathematics teachers;
 - the management of work in schools is not over-reliant on individual members of staff and is built into schools' management systems;
 - schools are helped to complete the subject audits so that they are useful in reviewing teaching and in identifying the action needed to improve it;
 - there is swift and comprehensive transfer of information from primary schools of Key Stage 2 assessments, including detailed test scores and samples of work, and better use is made of this information to set specific targets for improvement which are monitored through the year;
 - plenary sessions in lessons are used flexibly and geared to giving pupils an opportunity to say what they have learned;
 - more attention is given to the effective use of ICT in the teaching of English and mathematics;
 - the arrangements to teach the catch-up units are clearly defined in schools so that all pupils who need to use them are able to do so systematically and so that the units taught match particular needs;
 - teaching assistants receive adequate training to support the catch-up programmes successfully and to provide effective in-class support;
 - the match between the content of the progress tests and the strategy frameworks and teaching materials is re-examined.

- In relation to work on **English** and literacy across the curriculum, it is important that:
 - the overall Key Stage 3 teaching programme is planned so as to provide regular opportunities for guided, sustained and extended reading and writing;
 - text-level work allows for reflection on the ways in which language has been used for effect;
 - guidance and training for teachers include more on ways of tailoring the work of individual pupils and groups of pupils with particular weaknesses, especially in writing, including handwriting;
 - school libraries and librarians are as fully involved as possible in the strategy;
 - issues relevant to bilingual learners are more explicit in strategy materials and, where relevant, in training, and specialist staff are involved in the development of the strategy at school level.

- In relation to work on **mathematics** and numeracy across the curriculum, it is important that:
 - the training for non-specialist teachers of mathematics is effectively disseminated, particularly in schools where the staffing of mathematics is a problem;
 - schools continue to review and refine their mathematics teaching to ensure that time is well used, there is greater engagement of pupils in the main activity and effective use is made of plenary sessions;
 - schools are helped to develop pupils' skills of communication and presentation in mathematics, and their problem-solving skills;
 - schools review their long-term planning to determine the extent to which the order, structure and timing of units impact on pupils' progress.

- In relation to **summer schools** associated with the strategy it is important that:
 - recruitment of pupils reaches the intended target;

- the involvement of teachers from primary schools is pursued where possible;
- the flow of information from primary schools about pupils' attainment is improved, so that attention can be given to pupils' particular needs;
- target-setting is based on an assessment of individual needs, is specific about the improvements sought and is shared with the pupils concerned;
- systematic arrangements are made to follow up progress in Year 7.
- more attention is paid in the summer schools to writing, including handwriting and opportunities for extended writing.
- teachers in mathematics summer schools ensure that work is pitched consistently at a level high enough to help pupils towards level 4.

The management of the pilot in schools

The response in the schools visited

15. Almost all senior staff and most other key staff in the schools visited by HMI welcomed the pilot and were keen to be involved in it. Headteachers and other senior staff had a general appreciation of the elements of it, confirmed and broadened by the briefing and training they had received. Information about the science and ICT strands and what was then known as the 'transforming teaching and learning' strand was limited at the time of the visits in autumn 2000. The lack of a consolidated written account of the strategy as a whole, including the relationship between the different strands, was a disadvantage.

16. This lack of initial information prevented schools from fully involving different departments in the autumn term 2000. Communication to all staff was patchy in some schools. Links with other initiatives aimed at raising standards, for example action on boys' achievement and the use of the Ethnic Minority Achievement Grant (EMAG), were not developed.

17. Further information and guidance supplied during the year helped to improve aspects of school management and to clarify what would be expected in relation to strands of the pilot other than English and mathematics.

School preparations

18. The short lead-in time on which the introduction of the pilot was working limited what schools were able to do. Their early preparations focused, understandably and properly, on what was expected from them in relation to the teaching of English and mathematics in Year 7. A few schools were actively working on a whole-school approach to literacy.

19. At the time of the autumn visits the schools that were best prepared in these respects were those where the need for action on standards and teaching had already been identified, where there was a history of school-wide discussion of literacy and, less commonly, numeracy, and where action was already under way which was consistent with the intentions of the pilot. The lead-in time left other schools relatively unprepared and many were still thinking through priorities for action and management arrangements at the time of the visits. It would have been helpful to all schools to have had all the relevant material in September 2000.

20. Common, although not universal, concerns in the schools included how to manage attendance at off-site training to ensure that the key staff were involved in it while ensuring that disruption of teaching was kept to a minimum; and how to fit school-based training into the professional development time available without compromising other activities which the school was pursuing. Other priorities, for example new post-16 courses in 11-18 schools, competed for teachers' attention, so that the Key Stage 3 developments could not always be given the attention that they needed.

21. An important part of schools' preparations was the completion of audits of the teaching of English and mathematics. This useful process was completed with varying degrees of thoroughness, but generally not well. Schools' efforts were limited by the time available and, often, by the fact that first-hand evidence of teaching, response and standards of work was not gathered. In most cases the audits were based on discussions with some staff and on the co-ordinator's own views. Later, the involvement of LEA consultants and advisers refined the audit in some schools.

22. The weight of preparations fell on key members of the English and mathematics departments. Particular elements, such as revisions of schemes of work for English and mathematics, were sometimes rushed or incomplete and schools had often not managed to find time to debate the issues with all the teachers who needed to be involved. Despite these difficulties, some significant changes in the teaching of Year 7 classes, using the new teaching frameworks, were evident in most of the schools in the autumn term 2000.

23. Although concerns diminished in some schools, key members of staff had problems of finding time for particular aspects of implementation. These included: discussion of key issues; the preparation of materials for lesson starters; the matching of textbooks and other resources to the mathematics framework and the setting up of sessions using 'catch-up' units. At the end of the year, the marking of optional tests was more time-consuming for most schools than the marking of the school tests that they often replaced.

Management arrangements

24. The management arrangements which schools put in place to implement the pilot varied widely. In the autumn term, a few schools had anticipated the need to implement strands other than English and mathematics and had embryonic Key Stage 3 strategy management groups in place or in prospect. By summer 2001, a minority of schools had steering groups to oversee the implementation of all strands. However, more

commonly there was still little communication between departments, including between English and mathematics departments. Opportunities were therefore lost to share productive approaches to the pilot.

25. By the end of the first year of the pilot the quality of management was good or better in over two-fifths of schools, satisfactory in over two-fifths but unsatisfactory in over one in ten. Monitoring remained a common weakness.

26. Where management was good, this was based on clear leadership from the key heads of department, the active participation of a member of the senior management team and a structure for informing and involving other staff. Adequate monitoring arrangements meant that the school was able to gauge and report on the progress of the pilot based on an appropriate range of evidence, including the observation of teaching. Where management was unsatisfactory, monitoring was invariably one of the issues needing attention.

The 'additional menu' of activities

27. The activities the schools intended to pursue from the 'additional menu' were not always as envisaged in the guidance. In a few schools, the bulk of the funds was spent on paying allowances to teachers to lead the pilot developments. In these schools, the remainder was usually spent on resources to support changes in teaching. In many other schools, the activities chosen were determined partly by schools' involvement as lead schools for initiatives in their LEA, particularly for improving transition.

28. By the time of the visits in summer 2001, many schools had made relatively little progress in this element of the pilot. Developments usually linked to increased use of information technology to predict performance and track progress and sometimes to the use of 'bridging units' to aid transfer from primary schools, usually organised with the schools by the LEAs.

Transition from primary schools

29. The inclusion in the 'additional menu' of work on transfer and use of information from primary schools was highly appropriate in the light of the visits. The pilot exposed deficiencies in these respects.

30. In the autumn term the transfer and use of data were judged unsatisfactory in half the schools and good in only two. Information on National Curriculum test and

teacher assessment levels frequently arrived late and often comprised only the overall level. The information did not indicate differences in standards achieved by individual pupils across the attainment targets, which as national data shows, can vary widely. In many schools, information remained incomplete, especially in schools with a large number of partner schools or where a high proportion of the pupils had moved into the LEA. A significant minority of secondary teachers had limited confidence in both the test and the teacher assessment information received from primary schools.

31. The pilot has also highlighted the need in many schools to review assessment arrangements in Key Stage 3. Most schools and LEAs had plans to improve the quality and use of data from primary schools for September 2001 and there were signs of improvement in assessment arrangements in some of the schools visited in the summer.

English

Summary: the effects of the pilot

32. By the end of the first year of the pilot, the strategy was improving the planning of teaching and the organisation of lessons, more often in Year 7 English lessons than elsewhere. There were signs of new or renewed interest in literacy across the curriculum and productive changes in practice in several schools, but there was a long way to go in others. The use of 'catch-up' materials for pupils at level 3 in Year 7 was disappointing, but booster classes in Year 9, where they were run, were more effective.

33. In most schools:

- the focus of work was on Year 7;
- teachers appreciated the training provided for its practical value;
- positive use was made of the framework for teaching and the accompanying guidance in the planning of the curriculum;
- the introduction of a three-part lesson sharpened the organisation of lessons;
- the setting and communication of objectives improved;
- starter activities were beneficial and the use of them developed through the year;
- better use was made of equipment such as overhead projectors and whiteboards.

34. To varying extents, these features contributed to better teaching in the schools visited. There was substantial improvement in a quarter of the schools; the improvement was sound overall in well over a half.

35. Effects on attainment were evident with regard to the word and sentence levels in reading and writing, but less distinct in relation to the text level. Bilingual pupils benefited from the emphasis on oral work and from closer support for writing in mainstream English lessons. Progress in Year 7 was greater for pupils at levels 3 and 4, who form the great majority, than for others.

The management of the pilot

36. By summer 2001, many schools revisited had made considerable strides since the first visit: implementation

was good in over a third of schools and was satisfactory or better in all but one. Where there were problems, this was often because of staffing difficulties in departments that made it hard to maintain continuity and impetus and to make best use of the training.

37. The quality of the leadership of heads of English department was the key factor in the extent of the success of the pilot in each school. In the schools making the best progress, heads of department were positive about the strategy but evaluated it critically. They took decisive action on its implementation but did not compromise existing good practice in the process. In schools where the head of department was less effective, LEA consultants were often helpful in leading work with other staff in the department.

38. Critical to successful work on literacy across the curriculum were the availability of time to manage the work and the deliberateness and rigour with which it was pursued. Where the Key Stage 3 strategy manager was a head of department or special educational needs co-ordinator they often struggled to find time for the work. In schools where the development was most effective its management was by a member of the senior management team.

39. Initial preparations for the introduction of the strategy often relied too much on individual members of staff, with few formal structures, such as literacy groups, to support them. The management of links with other strands in the strategy was often weak at the outset and generally remained so. The attention to monitoring and evaluation of the outcomes was insufficient.

40. There was wide variation in the conduct of the audit at the beginning of the pilot year. In general, it was a paper exercise, raising staff awareness but not informing practice closely enough. Where classroom observation was undertaken, the critique of practice was usually unchallenging. Later, some LEA advisers and consultants worked with schools to make their audits more analytical.

41. Staff workload was a matter of concern from the outset of the pilot. Pressure was particularly great in schools with staffing problems caused by unfilled posts, rapid turnover and absence, and exacerbated by the need to attend training days out of school.

42. The time spent adapting schemes of work was considerable. Most schools managed changes to schemes for Year 7 and Year 8 during the pilot year but changes in Year 9 were limited. Preparation for the use of progress unit materials was also often time-consuming.

Training for school staff

43. LEA staff ran training sessions for heads of department, teachers and special educational needs co-ordinators in summer 2000. Overall, the training seen was well delivered. The response from teachers was generally positive. In most cases the training took account of local contexts, and there was sufficient opportunity for discussion.

44. Throughout the pilot year responses to regional and LEA training were generally very positive. The materials used were regarded as of high quality and helpful.

45. Responses to the school-based training on literacy across the curriculum were usually positive. The impact was greatest where senior management teams supported the thrust on literacy across the curriculum in active ways.

46. The teaching framework was welcomed by most schools as providing a clear focus for teaching of the different modes of language and a well-defined basis for progression. Some English departments with a strong tradition of putting literature at the centre of their programmes found it challenging to re-think the balance of content in schemes of work, while recognising the need to raise standards in reading and writing.

47. The best practice arose when staff in the English department were given time to work together on the development. Without this facility there were more likely to be inconsistencies in practice and wide variation in the quality of teaching, and sometimes in commitment to the pilot.

48. Despite concerns about experienced staff missing classes for training, most schools worked hard to release staff for training or to work together and with consultants on planning and materials. In a few cases staff shortages, including shortages of supply staff, made such release very difficult. Another problem was how to fit in school-based training when there were other calls on the time available. There were cases when not all those staff who needed to attend could be made available.

49. In general, co-ordinators of provision funded by the EMAG were not well represented at the LEA training attended by heads of English, which reduced their involvement in the initiative. Staff funded through the EMAG were involved in whole-school training on literacy but this did not always include sufficient attention to issues about the learning of English as an additional language (EAL).

50. Despite this, the schools in which bilingual pupils were the focus of visits were positive about the value of the strategy. Staff found that bilingual learners benefited from the emphasis on engaging all pupils in a wide variety of activities, the attention given to the explicit teaching of grammar, and the building of vocabulary supportive of bilingual learners.

Transition

51. In all schools visited in the autumn term there were deficiencies in the availability and use of information from primary schools about pupils' performance. Pupils were often put into English groups on the basis of limited information about prior attainment or spent a considerable period being assessed through tests and in other ways before being re-grouped. All this militated against a prompt start to well-pitched Key Stage 3 English teaching.

52. One promising development from the outset of the project, however, was from visits made by secondary school teachers to partner primary schools to observe teaching. Where this occurred, teachers reported a better understanding of the teaching approaches recommended by the strategy and more accurate expectations of Year 7 pupils, as well as improved contact with primary colleagues.

Changes in the teaching of English

53. There was an overall improvement in the quality of teaching in Year 7 English lessons over the year. The extent to which teaching improved was substantial in a quarter and sound in well over a half. About half the teaching in Year 7 English lessons observed in autumn 2000 was good or very good; by the summer term, six out of 10 lessons were good or better and a quarter were very good. Most of the remainder of the teaching was satisfactory in both the autumn and summer.

54. Progress was best where departments recognised the need to improve elements of planning, curriculum balance or teaching methods, but had at least a reasonably strong starting-point in the existing quality of teaching. Progress was least where departmental leadership was poor or negative about the potential benefits of change.

55. Lessons in Years 7 and 8 invariably used a three-part structure recommended by the strategy; lessons in Year 9 did not always do so. Lessons were commonly of an hour's duration but in some schools were as short as 35 minutes. The shorter the lesson, the more difficulty teachers had in including an adequate starter and plenary.

56. Lessons frequently began with teachers explaining the lesson content and the learning intended. A focus on objectives was generally a strength in lessons. Over the three terms there were improvements in making objectives accessible to pupils and, in the best cases, referring to them during and at the end of the lesson to review progress in meeting them.

57. Starters were usually carefully planned to a 10-15 minute timescale. Usually teachers created their own activities in order to match them to ongoing work. This was time-consuming during this first year, but most departments were building up a bank of such activities for future use.

58. Starters were often active. This was an aspect enjoyed by pupils and their learning was usually very evident. By the end of the year, starters were much more integral to the rest of the lesson than initially. Alternatively, there was more continuity of focus over a series of starters.

59. Relatively few starters were differentiated to take account of pupils' different needs. This did not matter unduly when lower-attaining pupils or bilingual learners received good support from teaching assistants, when starters were brief and made active by lively teaching, and when they contained useful reinforcement for higher-attaining pupils. However, the potential for greater differentiation of starter activities needed further consideration in several schools. A common problem was that, at the conclusion of the starter, opportunities were frequently missed for pupils to articulate what they had learned.

60. The main phase of the lesson was characterised by whole-class teaching and interactive approaches, often including group work. Directness was a feature of good whole-class teaching. This made efficient use of time and sustained the focus on learning that had been initiated in the starter activities. Pupils responded well to teachers' crisp delivery and the brisk pace, which encouraged pupils' engagement and positive attitudes to work. Use of models of writing was a characteristic of some of the more effective lessons, as was the use of 'frames' to support writing by less fluent writers. Differentiation by task in the main phase was a feature of several of the best lessons seen.

61. Overall, features characteristic of good teaching remained crucial in determining the success of the main phase, and, indeed, the whole lesson: teachers' subject knowledge; the selection of material that engaged interest; and the appropriateness of the intellectual challenge. These were features that were unaffected by

changes in lesson structure: where they were strong, lessons were effective and, where they were weak, teaching remained ineffective whatever the lesson structure used.

62. From the outset, plenaries were often the weakest part of the lesson. Good planning was critical to the success of plenaries. Often there was insufficient time for them, typically because teachers under-estimated the time required for activities in the main phase of the lesson. Plenaries were often the least active part of lessons. Teachers tended merely to sum up what happened during the main phase and pupils did not have the opportunity to articulate what they had learned. When pupils had such opportunities, they proved an important part of the learning process.

63. While almost all teachers took care to ensure that the framework objectives were covered in their teaching plans, there was less awareness of the value of using the objectives to support assessment and target-setting, or gauging how well the skills inherent in the objectives were being learned by pupils. From the outset, teachers recognised target-setting for pupils as a necessary step towards improving standards. Except for pupils with special educational needs, there were insufficient data on prior attainment available to undertake well-founded target-setting early in the year.

64. At its best, target-setting identified a small number of targets that were based closely on the strategy teaching framework, were comprehensible and accessible to the pupils and to their parents. More typically, targets were confusing to pupils and insufficiently specific. They were not easily accessible, they did not inform on-going work and attention to them was not maintained by either pupils or teachers. Consequently teachers were not in a position to determine which targets had been met or whether new targets should be set, and pupils were not sufficiently involved to enable the process to improve their work.

65. The use of assessment to define the problems in pupils' work that need to be addressed remained a weakness in most schools. Detailed correction of pupils' written work rarely led to close attention to how to remedy recurring errors. A significant number of teachers were not sufficiently conversant with ways of addressing weaknesses, particularly in writing, including handwriting.

Literacy across the curriculum

66. Many of the schools visited had a history of work to develop literacy. By summer 2001 there were signs in

several schools of a new or renewed enthusiasm to tackle literacy as a school-wide issue which resulted in some successful practice. Four-fifths of the lessons sampled to observe literacy in lessons other than English were good or better and two-fifths were very good, although this sample often included departments or teachers selected for their good practice or development work in this area.

67. Features of good teaching in this respect included:

- establishing one or more literacy objectives in relation to individual lessons or sequences of lessons in the subject;
- explicit attention to subject-specific vocabulary, including displays of key words and close attention to new terms and reference to their derivations;
- including within lessons opportunities to read challenging material;
- advice to pupils on reading aloud with accuracy and expression;
- recommendation of appropriate reading material in connection with homework and research projects;
- clear definition of productive writing tasks, illustration and discussion of how to approach them, and the use of 'frames' and other supports for writing;
- expectations on the use of dictionaries and thesauruses;
- marking of work covering aspects of language use in a sensible and consistent way.

68. In some schools, whole-school policies were being implemented systematically. For example, department meetings considered literacy matters routinely, there were deliberate moves to increase the amount of reading in class and for homework, and samples of writing were considered for the quality of their writing as well as for their subject content. Occasionally, classroom observation by senior managers had a focus on literacy.

69. Pupils in a significant proportion of pilot schools, particularly in Year 7, lacked opportunities to read, write and talk in a sustained and/or extended way. While this was sometimes the case in English, it was even more marked in other subjects. As a result, pupils were often unable to demonstrate the application of their learning of literacy.

70. In general, there was too little follow-up of literacy learning from one classroom to another, either from English to other subjects or from classes involved in progress units to mainstream English classes. What was learned in English lessons or progress unit sessions did not always transfer to work in other subjects. Transfer of learning about literacy was helped in some schools by visual reminders of learning displayed in classrooms and elsewhere in the school and in diaries or planners which pupils carried round from one lesson to another.

71. Few schools saw fit to involve their EAL support staff closely in the development of the strategy. Where these staff were closely involved, bilingual pupils were well supported. Support staff were able to take more active roles in lessons than had often been the case before. The strategy worked best when staff felt able to modify the materials to take account of the context of the school and the particular needs of their bilingual learners. Only a minority did so fully.

Intervention to help pupils reach the expected standard

72. The arrival of the progress unit materials for pupils at level 3 during the autumn term, rather than at its start, delayed their use. Thereafter, problems in organising their use were not solved by most schools in the pilot year. Overall, the intervention was at least satisfactory in three-fifths of the schools visited but in two-fifths of them it remained unsatisfactory at the end of the year.

73. The quality of teaching in the individual sessions seen where the progress units were used was predominantly good. However, there was often too much to be covered in the length of the sessions proposed. Bilingual learners, in particular, needed more time to complete tasks and for feedback on them. The relevance of the materials for bilingual learners was also limited by the lack of context for language work and the fact that the cultural content was sometimes not appropriate.

74. Pupils benefited most when interactive approaches were used and class sizes were small. Some of the best teaching of the progress units was by special educational needs teachers or teaching assistants with experience of small group work. However, where the teaching or organisation was largely within the special educational needs department, there were problems if English staff did not know enough about the content of the units or the approach and were unable to build on the work done.

75. Timetabling problems, sometimes combined with a lack of precise assessment of pupils' needs, led to fragmented or insufficiently targeted use of the units. In

some schools the whole of the target group was systematically covered by the teaching of these units. However, quite frequently, not all the eligible pupils went through the units they needed, or pupils followed all units when they only needed some, or only a minority of the units had been used at all. In some schools sessions on the units were offered after school, before school or in the lunch hour on a voluntary basis. This was ineffective, as it led to many pupils who could have benefited from working through the units not doing so, or not doing so systematically.

76. Progress unit materials were sometimes integrated into mainstream English lessons with lower sets, although some staff found this hard to accomplish successfully. Otherwise, to minimise timetabling problems, a full 50-60 minute lesson was used to teach two units back-to-back. This was less effective than a little-and-often approach.

77. Some schools rejected the idea of teaching assistants teaching the progress units. This limited their flexibility in timetabling the units; for example, tutor time was not available as most special educational needs or English teachers had tutor groups. Teaching assistants were positive about the units and the chance to teach them, although, in common with teachers, they found the units needed considerable preparation and were sometimes hard to fit into the 20-minute slot assumed.

78. By the end of the year there was some clear evidence of the positive impact on confidence and self-esteem, with the pupils concerned sometimes contributing well in mainstream lessons.

79. Where Year 9 literacy booster classes were seen, the teaching was generally good. The best incorporated elements of the strategy's approach to teaching, particularly interactive approaches. In general, the quality of learning was good but, because booster classes were offered on a voluntary basis, staff felt that the pupils most in need of them often did not attend.

Learning resources

80. Resources to implement the pilot in English lessons were generally satisfactory.

81. Where English classrooms, school libraries and other classrooms were supportive of literacy in terms of the materials available and displays, this helped considerably. The increased numbers of overhead projectors were well used in classes to focus on shared texts. Wipe-clean mini-whiteboards were well used to enable teachers to check pupils' answers and to promote a have-a-go approach to spelling and drafting.

Some libraries were well stocked with a range of fiction and non-fiction of suitable levels of difficulty for pupils, and were staffed by a librarian closely involved in raising standards in reading.

82. There were weaknesses where libraries were under-used to support literacy and where personal reading was squeezed out of the English curriculum. Other weaknesses in some schools included:

- poor or poorly presented library stock;
- restrictions on books being taken home, so that extended reading was discouraged;
- flipcharts or whiteboards were not used sufficiently to capture the outcomes of plenary discussions.

83. More and better use of ICT was seen as the year progressed, for example integrated learning systems (ILS) used in conjunction with the teaching of progress units. However, in the main, the potential for ICT to enhance learning in mainstream English classes was not being realised.

Impact on attainment

84. By the end of the pilot year, there were clear improvements in some aspects of performance in Year 7 English classes. Improvements were most evident, although unevenly so, in word- and sentence-level work. Improvements in text-level work were less noticeable. Text-level work based on literature had tended to be a strong feature of the work of many departments in the past and the amount of it was less affected by use of the strategy framework.

85. Improvements in word- and sentence-level work were clearest in spelling strategies, the use of vocabulary and the understanding of stylistic conventions. Improvements were least in sentence construction, punctuation and paragraphing. The pilot led to some well-structured non-narrative writing in particular, and it made pupils more aware of the need for variety in their writing.

86. Improvements in text-level work were evident in reading for meaning, writing to persuade and collaborative group work. They were least in understanding the author's craft and the study of literary texts, including critical writing about literature. These are, however, skills which are particularly needed for success in the optional tests and Key Stage 3 tests.

87. Advances in the use of oral language were often constrained by the lack of opportunities which teachers

provided for pupils to speak at length and to engage in role-play and similar activities. However, some notable gains were made by bilingual pupils in speaking and listening, however, through greater opportunities for oral work. The support for writing, through the use of models and frameworks and other word- and sentence-level work, also helped their progress.

88. Overall, evidence from lessons observed and pupils' work showed that progress in Year 7 was most pronounced for pupils at levels 3 and 4. Progress was much less evident for pupils at level 2 and at level 5 and above.

89. In broad terms, improvements in Year 8 reflected those in Year 7. Improvements in word- and sentence-level work were more evident than in text-level work. Advances were more uneven in Year 8 than Year 7. For example, there was progress in some aspects of spelling but not in others. There was insufficient evidence in Year 9 to make firm judgements of the pilot's impact.

90. Three terms into the pilot, many schools were at an early stage in monitoring and evaluating its impact on literacy levels in classroom work. In a very few schools, senior managers had scrutinised the written work of pupils to detect progress. Where they undertook classroom observation with a literacy focus, they sometimes lacked understanding of what to look for.

91. Progress tests were taken by pupils who came to the school with a level 3 performance. Teachers were concerned that the progress tests did not reflect the spirit or the content of the strategy materials. The test results varied greatly from school to school and were disappointing overall. In a few of the schools visited, almost half the eligible pupils achieved level 4 in the tests, but the average was just less than a quarter. The proportion of eligible pupils achieving level 4 tended to be lower in schools with more disadvantaged intakes.

92. Optional tests were taken by level 4 pupils in Year 7 and Year 8 at the end of the pilot year. They were intended to give an indication of progress by these pupils. Marking proved time-consuming. Not all schools were able to provide staff with time to moderate it. In a few cases, optional tests were marked externally. The results for Year 7 pupils were encouraging, with about half of pupils achieving level 5 or above in English.

93. The potential of the optional tests to support diagnostic assessment was recognised but few schools had been able to undertake a full enough analysis to influence the future teaching of groups or individuals.

Annex: summer literacy schools

94. HMI visited 20 summer literacy schools in 12 LEAs in summer 2000, all of which were involved in piloting the Key Stage 3 strategy.

95. Of the 20 summer literacy schools, half were judged good, compared with 20 per cent in 1999. There were none that were unsatisfactory, compared with 10 per cent in 1999. Pupils made good progress in two-fifths of lessons in the summer schools visited but poor progress in almost three in ten. Progress was adversely affected by discontinuities in staffing, by the lack of opportunity to review learning, which was by far the poorest aspect of the teaching, and because skills were not being developed systematically enough. Pupils achieved best in speaking and reading and least well in writing, particularly if the task involved extended writing.

96. One-third of the summer schools recruited their target number. Recruitment was difficult in the remainder. Attendance was good in two-thirds of the schools and a problem in a fifth. Most pupils were aged 11 and at level 3 but in three-fifths of schools pupils of other ages and levels of attainment were accepted.

97. Compared with previous years, many more co-ordinators had a background in the teaching of English or special educational needs. Typically, they had no preparation time prior to the summer school. More secondary teachers were involved than in 1999 but more schools had primary teachers on their staffing. Summer schools without staff from primary schools had attempted to recruit them but had failed to do so. Primary teachers brought considerable strengths and were generally more expert than their secondary colleagues in supporting pupils who were writing independently, in hearing children read and in managing plenaries.

98. Teachers and support staff were better informed about literacy than in past years. Most had previously been involved in summer schools and gained useful experience. Training specifically for the summer schools was as variable in amount and quality as in 1999.

99. Practice was much more closely aligned to the National Literacy Strategy framework for teaching than before. Most schools made use of the special units of material and the suggested structure for organising each day provided by the national team. The recommended materials and guidance on structure provided a focus on literacy and a coherence to the programme of work which was sometimes lacking in schools which followed other schemes.

100. The use of short sessions helped to maintain a good pace of work and was a strength in a quarter of schools. Common weaknesses included the lack of end-of-day plenary sessions and the fact that pupils worked in unchanging groups.

101. Teaching was good or better in three-fifths of lessons. The best lessons were characterised by the teaching of specifics, the setting of timed tasks and an interactive style. Pupils' response was good or better in almost four-fifths of lessons.

102. Links between pupils' needs and detailed planning to address these needs were generally weak. In a third of the schools, primary schools had provided good information about pupils' attainment. There was very little information available in three-fifths of the summer schools. In contrast with previous years, there was less testing and re-testing and a greater preference for individual target-setting. Frequently targets were not based on assessment of individual needs, lacked specificity and were not known to the pupils.

103. Resources were at least adequate and often good. Whiteboards were a new resource that was well used.

104. A fifth of the summer schools had detailed plans for the follow-up of pupils in the autumn term in the secondary school, including identification of pupils for 'catch-up' programmes. The majority of the schools were unclear about follow-up.

Mathematics

Summary: the effects of the pilot

105. By the end of the first year the strategy was having a clear, positive influence on the planning and organisation of lessons and on teaching methods in some mathematics lessons in Year 7 and sometimes in other years. Work on the teaching of numeracy across the curriculum was in its infancy and there was little sign as yet of significant change. The use of 'catch-up' materials for pupils working at level 3 in Year 7 had limited benefits, although use of the materials improved somewhat during the year.

106. In most schools:

- the focus of work was on Year 7, but some schools used three-part lessons in other years;
- opportunities for professional development were made available to a high proportion of teachers, who valued the focus on teaching;
- teachers made generally good use of the materials on teaching, including the comprehensive set of examples and the vocabulary list;
- the Year 7 curriculum was planned from the strategy framework, with objectives set in accordance with the yearly teaching programme;
- reference to the Year 6 teaching programme helped to inform transition and progression;
- use of the framework raised teachers' expectations of pupils, so that they pitched work at a higher level and covered material at a faster pace;
- the introduction of three-part lessons improved the organisation of teaching and helped to engage pupils more directly in their learning;
- there was a stronger emphasis on direct and interactive teaching, and, in particular, the regular use of oral and mental starters in lessons was a significant change;
- generally appropriate learning targets were set, usually for the whole class, and occasionally for groups to suit the range of attainment in the class, but rarely for individual pupils or groups of pupils.

107. To varying degrees these changes improved teaching in mathematics lessons. The improvements were not even, but they were substantial in over a third of schools and sound in nearly a half. By the end of the year, mathematics teaching was satisfactory overall in the schools visited, with half the teaching judged as good.

108. There were positive effects on pupils' attainment, including their arithmetical skills and the quality of their oral work. Low-attaining pupils, particularly in schools where a relatively large number entered Year 7 at level 3 or below, made less progress than higher-attaining pupils. Pupils' skills in presenting ideas both orally and in writing varied considerably, with pupils sometimes lacking the language needed to talk about their work in a sustained way or the skills needed to present their work carefully. A greater range of topics was covered during the year than under previous schemes of work. There was more work at level 5, particularly in number and algebra.

The management of the pilot

109. By the end of the first year of the pilot, the implementation of the strategy in mathematics was good in a majority of schools. Most schools had made sound or good progress since the autumn term, when the quality of implementation, although sound overall, varied considerably.

110. Factors that helped the successful implementation of the strategy included the active support of senior management and the commitment of key members of the mathematics department. Staff in the schools where implementation was initially weaker were sometimes reluctant to be involved in the strategy. Sometimes some of these mathematics departments were managed poorly or were affected by having a high proportion of non-specialist teachers, or both.

111. The recruitment and retention of staff were major constraints in about half the schools. A large number of non-specialist staff and the use of temporary staff to cover vacancies made it difficult for key staff to cascade training and manage change. Schools continued to experience difficulties in staffing, and two had no substantive head of department.

112. Schools identified a member of the mathematics staff to co-ordinate the initiative within the department and usually a member of the senior management team to manage the pilot across the school. When this worked well, roles and responsibilities were defined and clearly understood. Weaknesses were often associated

with the poor quality of the department's management, with teachers expected to implement changes they did not fully understand and on which they had received little guidance from within the school.

113. While the response of the schools to the strategy varied, it was mostly positive. Two examples reflect the ends of the spectrum. The response in most schools fell somewhere between the two in terms of attitudes, commitment and changed approaches to teaching.

114. One high-achieving school had a strong, stable team of teachers and a head of department with a clear understanding of the strategy and awareness of recent developments in primary schools. The teachers were well prepared and able to build on initiatives in the school developed over the previous three years. The departmental development plan, drawn up prior to the Key Stage 3 pilot, included references to integrating investigational and ICT activities into the scheme of work.

115. By contrast, in another school, staff appeared to think that if the materials were changed and lessons were split into three parts, pupils would automatically benefit. They did not appear to appreciate that they still needed to think carefully about their teaching to make pupils' learning effective. A lack of teamwork and of support from senior management limited progress. The external training provided by the LEA, to which the headteacher was opposed because it was difficult to recruit supply staff, had, in the event, little effect on the teaching.

116. Following the training in summer 2000, most schools reviewed their Year 7 mathematics scheme of work and started to become familiar with the national guidance and teaching materials. Relatively few schools, however, had undertaken sufficient preparatory work to have arrangements in place by the start of the autumn term. In a minority of schools extra non-contact time was allocated to individual staff in the mathematics department to plan the Year 7 curriculum. Occasionally, schools funded joint planning, but the difficulty in obtaining supply cover limited the opportunities for departmental staff to work together during the school day.

117. Some departments had devoted considerable time to adapting Year 7 schemes of work to the structure set out in the framework. Departments that had developed units of work along the lines of the sample units provided in the training found this to be valuable, although time-consuming.

118. A key element of preparations for the pilot was the completion of an audit of mathematics teaching. Generally, the audit was not undertaken thoroughly enough. In particular, too little attention was given to the observation of teaching and to discussing the results and implications of the audit within the department. In those schools where recruitment of staff was difficult it was not possible to provide supply cover for observations to take place. Some managers lacked the experience or the skills needed to analyse data and evaluate teaching in order to identify clearly the action that needed to be taken. In a minority of schools the observation of teaching was part of an annual cycle of monitoring by senior management, and this informed the audit, identifying strengths and expertise in the department as well as areas where further development was needed.

Training for school staff

119. The response from teachers to training provided by LEAs in summer 2000 was positive. The content was helpful and the recommended approach to teaching was exemplified well. Further training was given to heads of department over the year by LEA consultants. In the autumn and spring terms, training was also provided for non-specialist and less experienced teachers of mathematics.

120. The framework for teaching, with its supplement of examples, provided a productive basis for an approach based on objectives, some of which are re-visited. Its comprehensive coverage, based on detailed learning objectives, was helpful for teachers to use in their planning. Schools that successfully implemented change recognised the value of the time they devoted to discussing the framework. However, schools where a high proportion of mathematics teachers were non-specialists or where there were significant weaknesses in mathematics teaching usually lacked a sound basis to implement the changes on their own and needed more intensive LEA support than was generally on offer at the time.

121. The training for mathematics teachers was well received. Many teachers were motivated to try new ideas, particularly at the start of lessons, and were pleasantly surprised at the effect on pupils' motivation. In most schools, the training led to constructive discussions in departments, encouraged the use of objectives in planning lessons and led to a review of teaching approaches.

122. The course for non-specialist teachers of mathematics comprised an initial two-days training, followed up in the subsequent term by two further days. The initial focus was on the framework and approaches

to algebra. The subsequent two days related to ratio and proportion and geometry. Teachers valued the course, especially the opportunities given to reflect on teaching approaches for the topics covered. A valuable feature of the course was the focus on pupils' errors and misconceptions, enabling teachers to deepen their own mathematical understanding. Response from teachers to this training was good.

123. The majority of teachers benefited from the increased professional development opportunities throughout the year, mostly by attending external training courses arranged within their LEA. Professional development continued in many departments because of increased efforts to share successful practice.

124. Schools often found it difficult to obtain supply cover to release teachers for training, particularly when several teachers from a number of local schools attended the same course. Headteachers - and teachers themselves - expressed concern that absence of a teacher had an adverse effect on pupils' progress. In most schools, support staff were not involved in the training courses.

Transition

125. In autumn 2000 HMI judged that the flow and use of information on pupils' performance as they moved from primary to secondary schools was good in only a small number of schools. Most schools recognised the need to improve the arrangements for transition, to use the available data to track pupils, particularly those who had achieved level 3, and to set targets for pupils throughout their three years in Key Stage 3.

126. Schools often supplemented Key Stage 2 test data with the results of standardised tests they carried out themselves. Staff recognised the general improvement in the performance of pupils from Year 6, including their knowledge and mental arithmetic skills. Many of the schools visited taught mathematics to mixed-ability classes in Year 7, although increasingly schools were using data from primary schools to organise teaching groups based on pupils' attainment.

127. Few secondary schools had access to pupils' Key Stage 2 test scripts for analysis. When they did, it helped to identify strengths and weaknesses in pupils' mathematics. For example, the head of mathematics in one secondary school analysed the scripts from four main partner schools. This usefully highlighted differences in the performance of pupils from the different schools and formed the basis for helpful discussion with Year 6 teachers.

128. All the schools were working towards producing a database of the assessment data on Year 7 pupils. The amount, quality, presentation and use of these data varied across the schools: they were good in two-fifths of schools. Where practice was best, the data were made available to all the teachers. Only one school briefed staff on using the data. In the more effective schools the data were used to predict outcomes and to set targets and as a basis of tracking pupils' progress.

129. While the process of setting targets had been initiated in half the schools visited in the autumn term there was little good practice. In one school, the test and teacher assessment results in the core subjects for all Year 7 pupils had been collated by the head of mathematics and stored electronically to aid target-setting. More often targets had been set on a general basis for whole year groups and took too little account of the prior attainment of pupils.

130. The pilot has helped to stimulate or strengthen links between primary and secondary schools by encouraging secondary teachers to visit partner primary schools. When secondary teachers observed leading mathematics teachers this helped them to develop a better understanding of the teaching approaches recommended and to identify the expectations primary teachers were setting their pupils.

131. Secondary schools were generally keen to forge these links as part of the work funded through the additional funds for school-based initiatives. One approach was the use of 'bridging units' between primary and secondary schools. Where it was observed this approach was generally not successful and was sometimes judged to pose severe administrative problems. Although there was some good practice, bridging units did not help pupils to experience continuity in their work from Year 6 to Year 7.

132. Awareness of the need to improve arrangements for transition has been enhanced by the pilot and better preparations were being made in some schools during summer 2001.

Changes in the teaching of mathematics

133. There were substantial improvements in teaching in over a third of schools and improvements were sound in nearly a half. About half the teaching observed in the schools visited in the autumn and summer was good, including one-sixth that was very good. There were weaknesses in almost one-sixth of lessons in autumn 2000; this proportion dropped to one-tenth of lessons in summer 2001.

134. Teachers became more familiar with the framework and the use of objectives to inform planning. Increasingly schools modified their Year 7 plans or completely re-designed them in line with the sequence of units set out in the framework. A few made major changes from previous practice. One school, for example, had used a thematic approach to avoid undue skipping between topics, whilst another had produced a large wall-chart to show links between units, which exposed the isolated nature of some of the shape, space and measure units.

135. Because teachers were giving urgent attention to planning the units of work they were presently teaching, they had an insufficient grasp of the important links between different units of work. The yearly teaching programmes in the framework offer detail on progression in the work in Key Stage 3 but their use was sometimes not flexible enough. Teachers' choice of objectives needed to take more account of differences in pupils' attainment, particularly in mixed-ability classes. The better teaching drew on Year 6 and Year 8 objectives to set appropriate work for the span of attainment in the class. A few schools, particularly those with a large proportion of higher-attaining pupils, modified the selection, order and time allocation of some units in the Year 7 teaching programme so as to build on their previous practice.

136. The use of a three-part lesson structure was affected by the length of teaching sessions, which varied from 35 to 70 minutes. It was difficult to implement a three-part lesson in periods of 35 minutes: there was often not enough time for pupils to work in a sustained way and then to have a plenary that checked whether learning objectives had been achieved. On the other hand, in some 70-minute lessons pupils struggled to concentrate for the whole time.

137. The use of starter activities was generally successful and improved over the year. Teachers and pupils enjoyed them, and they engaged the whole class in a common task. Teachers' questions were well directed and increasing use was made of practical resources. The use of mini-whiteboards allowed pupils to display their solutions and gave the teacher immediate feedback on their thinking.

138. The guidance on the teaching framework stressed the flexible use of a three part lesson structure. In some schools, there was a rigid use of starters for 10-15 minutes in every lesson, leaving less time for written work.

139. In a few schools, the emphasis on mental work was interpreted as meaning increased mental testing with

insufficient opportunity for pupils to discuss their methods. Where oral work was good, pupils were challenged to reason and to explain the sequence of their thinking.

140. The framework's objectives were helpful in the setting of clear expectations for pupils in the main activity. Teachers often made explicit references to their teaching objectives and paid careful attention to vocabulary. Expectations were usually appropriately challenging. In most lessons, there was direct teaching, with practice and consolidation through work from a worksheet or textbook. However, too often, there was not enough discussion between teacher and pupils, with the focus placed on technique rather than understanding and application.

141. The use of the plenary was the least successful element of three-part lessons. The best plenary sessions, which did not always occur at the end of lessons, gave pupils opportunities to articulate what they had learned and this helped to highlight their mistakes and misunderstandings which the teacher then used for further teaching. The use of short plenaries during the lesson kept pupils on task and provided teachers with valuable diagnostic information.

142. In good lessons work was pitched at an appropriate level of difficulty. The main teaching activity was designed to take careful account of the nature of the topic and the length of the lesson. The initial mental activity was well focused. It was often linked to the main activity and engaged pupils through good questioning. Good questioning by teachers challenged pupils to deduce results for themselves and develop their skills in reasoning. Explanations were presented clearly and pupils understood what they were expected to learn. Pupils participated through discussion and occasionally were encouraged to come to the front of the class to share their ideas and solutions. Teachers maintained the pace of the lesson by setting deadlines and intervening to monitor pupils' progress.

143. In a very good lesson on lowest common multiples, there was a partly improvised mix of individual work and group discussions, some of which addressed pupils' misconceptions. In another good lesson, the teacher introduced short oral and mental activities at different points in a lesson with a lower-attaining set to maintain their interest and involvement. Pupils enjoyed the repeated challenge and many made noticeable progress over the lesson.

144. A common weakness in the lessons seen was that learning was not adequately consolidated for the lowest-

attaining pupils throughout the lesson. Teachers sometimes moved to new material in order to meet their pre-set learning objectives without taking sufficient time to review the learning that had taken place. Pupils were not always asked to explain how they had derived their conclusions or answers.

145. In the weakest lessons, which were more often than not taken by non-specialist staff, the starter activity was undemanding, usually based only on recall of simple numerical facts and basic mental strategies. The main activity was poorly taught, so that explanations were confused and time was not used well. There was no summary at the end of the lesson, which was often ragged.

146. The effectiveness of the teaching was related to the confidence of the staff. For example, in one school where limited improvement was discernible in the teaching over the year, only four of the teachers were working full-time in the mathematics department and the other six had substantial commitments elsewhere in the school; some had no specialist mathematics qualification.

Numeracy across the curriculum

147. Cross-curricular numeracy courses were planned for the spring and summer terms. Some schools had difficulty in finding the necessary time, and many were only able to devote a half-day in the summer term, whilst a few delayed the training. Where it took place, schools acknowledged the assistance of consultants in setting up the training for staff. The materials to promote numeracy across the curriculum were of good quality and encouraged good discussion.

148. The outcome of this work in some schools was a draft numeracy policy. It was too early to judge the impact on classroom practice. That the impact is not necessarily straightforward was illustrated in one school where, despite well-organised training in the spring term, lessons seen in geography and technology in the summer term made unrealistic assumptions about the level of pupils' numerical skills.

Intervention to help pupils reach the expected standard

149. Schools' action to raise the attainment of pupils who had not reached level 4 improved through the year but remained unsatisfactory in a third of the schools.

150. The strategy's 'Springboard 7' materials comprise 15 units with supporting elements. The use of these

materials was on the whole disappointing, although it improved from a shaky start. More use was made of the materials when pupils were grouped by attainment. The teachers of classes with mainly level 3 pupils were using the materials to direct their teaching but, too often, the materials were used merely as a series of worksheets, with little interactive teaching to identify and remedy pupils' weaknesses. Teachers did not generally make sufficient use of the guidance provided and this led to much variation in the approach taken.

151. Very few schools had established a 'catch-up' programme that took account of the particular weaknesses their level 3 pupils displayed. In schools where pupils were in mixed-ability classes for mathematics, the Springboard 7 materials were sometimes used as differentiated tasks for pupils who needed to revise earlier ideas and methods. While it was advantageous that all pupils were working on the same topic, little of the whole-class teaching was directed at the level 3 pupils. In a few schools, extra teaching time had been arranged for pupils at level 3, usually outside normal school hours. One school with large numbers of low-achieving pupils tried to use the Springboard 7 materials in a voluntary lunchtime activity, but without success.

152. In general, the work seen indicated that level 3 pupils were making slow progress. Schools expected the majority of these pupils to reach level 4 in the progress tests, but the target was often unrealistic because of the lack of well-focused, intensive support aimed at these pupils.

153. Difficulties of staffing and timetabling led to many schools being unable to run booster classes in Year 9. There were some successful examples. In one school, an experienced mathematics teacher took a specially created class of level 4/5 pupils for just over half a term, whilst a non-specialist supply teacher took his class. This worked reasonably well as a short-term measure.

Learning resources

154. Departments were not always clear about how much they had to spend under the pilot. Nevertheless, by the end of the year, the availability of books and basic equipment was invariably adequate and often good; this was an improvement on the position in the autumn.

155. Increasingly, departments were investing in extra resources to support oral and mental starters. Those who had purchased such resources were beginning to make effective use of them in the classroom. The use of mini-whiteboards worked well, allowing pupils to 'have a

go' and wipe them clean if they made a mistake. It also enabled the teacher to see at a glance, the response of all pupils.

156. Most schools used a textbook or selected from a variety of textbooks to support the teaching; some schools had purchased new textbooks. Departments found it difficult to match the objectives in the framework with the content of a single textbook. The matching of existing resources to the use of the framework proved a significant undertaking.

157. Many schools were limiting, or eliminating completely, the use of calculators with Year 7 classes, responding to the need to enhance and retain pupils' mental skills. Few departments had considered how the calculator could be used to enhance the teaching of arithmetical skills.

158. The use of ICT was limited to individual pupils spending time on integrated learning systems (ILS) to strengthen their numeracy skills. Use of ICT was rarely seen in mathematics lessons.

Impact on attainment

159. The pilot has had a positive impact on attainment in most schools. The work was often at level 5, particularly in number and algebra. Pupils' facility with number and algebra was enhanced, although the pace and change of topics was sometimes too fast for lower-attaining pupils. Pupils were motivated by the mental and oral activities in the lessons seen and the starter activities and discussions helped to maintain their arithmetical skills. They were stimulated by the interactive teaching and were willing to contribute to plenaries to review objectives. However, pupils' skills in presenting ideas both orally and in writing varied considerably. It was clear that some pupils lacked the language needed to talk about their work in a sustained way, or the skills needed to present their work carefully.

160. The results of the **progress tests** were very disappointing. In most of the schools visited, less than 10 per cent of eligible pupils achieved level 4. The average for the schools visited was nine per cent. Only one school achieved greater than 20 per cent. The proportion of eligible pupils achieving level 4 tended to be lower in the more disadvantaged schools.

161. The progress tests were criticised for their lack of relevance to those pupils who had just achieved level 3. Too many questions were judged to be too difficult and had not been covered in class work in Year 7 and so were not attempted.

162. The results of the **optional tests**, where available, indicated that the majority of pupils entered for the tests had made good progress. About half the pupils had progressed by at least one level, from level 4 to 5, or level 5 to 6; about one-fifth had regressed and not attained level 4. From the scripts seen, weaknesses in algebra and some shape questions reflected pupils' limited experience of these topics.

Annex: summer numeracy schools

163. In summer 2000, HMI inspected ten summer numeracy schools in seven LEAs involved in the Key Stage 3 pilot, and a further ten summer numeracy schools in other LEAs.

164. Of the 20 summer schools inspected, two-fifths were judged good, the same proportion as in 1999. One in ten had important weaknesses, compared with a quarter that were predominantly weak in 1999. The good summer schools were well organised and used time effectively. The summer schools with overall weaknesses did not recruit successfully and too many lessons were unsatisfactory.

165. Recruitment continued to cause some problems but was better organised than in 1999 because of the earlier notification of the availability of funding. About half the summer schools were able to recruit close to 30 pupils as intended, although one had only six pupils and another two had fewer than 20. The rest were able to recruit over 20 pupils. Attendance was generally good, and better than in 1999.

166. Pupils attending the summer schools were usually those who had attained level 3 in Key Stage 2 tests in the previous school term. In the lessons observed, work was always at or below level 4. In two-thirds of lessons, compared with a half in 1999, the work was pitched at level 3 or below. Whilst this helped to reinforce pupils' skills and raise their confidence, the general level of work in this significant proportion of lessons was insufficiently challenging.

167. Most of the work was on number, particularly linked to the four rules. Good attention was paid to mental work and strategies. Often there was a mental session to start the day, as well as an oral/mental starter to lessons. Pupils' speed and agility of response to questions were enhanced by these activities.

168. There was some work on measures, but work on spatial and statistical aspects was more limited. In a few cases, pupils collected information from trips or competitive activities, and used techniques to represent

and analyse the data. Pupils also used mathematical ideas in context: for example, in a home economics lesson, pupils baked biscuits and learnt how to adjust and cost the recipe.

169. In the lessons seen, teaching was good or very good in half, compared with two-thirds in 1999, and unsatisfactory in a quarter compared with a sixth in 1999. In the best lessons there was a clear structure with a lively, interactive approach. The weaker lessons pitched work without sufficient care to ensure consolidation and progress and did not engage pupils sufficiently. Good teaching in one lesson involved diagnostic help in addressing pupils' misconceptions. More generally, mathematical activity based on remedying individual difficulties was uncommon, despite a relatively generous pupil-teacher ratio.

170. In several schools, there was good access to ICT suites. A variety of programs was used including software for mathematical investigations, as well as individualised packages. This worked well overall, except in cases where teachers had not received sufficient training in the potential of the software or where lack of technical support hindered pupils' progress. Occasionally, teachers from other subject areas taught a session, such as art or home economics, and made links to underlying mathematical ideas such as measures or symmetry.

171. Pupils' attitudes and behaviour in lessons were good or very good in most lessons and never less than satisfactory. The pupils' learning was good or very good in nearly a half of lessons, but unsatisfactory in one-sixth, similar to the proportion in 1999. Pupils participated well in sessions and were willing to explain and discuss strategies.

172. Teachers valued and made good use of the national materials and guidance on planning and running a summer school. Occasionally, teachers followed the guidance exactly and did not devise a separate scheme of work. In the most effective summer schools, teachers reviewed sessions daily and adjusted subsequent work appropriately.

173. Most summer schools were co-ordinated by an experienced member of the mathematics department in the host secondary school. Usually, there were two or three secondary teachers and one or two primary teachers; all teachers had satisfactory expertise. In four summer schools, there were no primary teachers, despite the efforts made to recruit from a local partner school.

174. Most of the money was spent on staffing, typically £5000-£7000. Usually teachers were paid at the supply teacher rate with an extra allowance paid to the co-ordinator. Student helpers were usually paid a fixed amount. In most cases, staffing levels were appropriate with three teachers and a few student or adult helpers. However, in some cases, staffing was excessive, with a ratio of one adult to every two or three pupils. In those cases, either staff were not well used or pupils had insufficient opportunity to work independently. Accommodation for the summer schools was good and often enlivened by the display of pupils' work. Resources were generally sufficient to support lessons.

175. Over three-quarters of schools set targets for pupils at the start of the summer school based on individual discussion, previous test results or a test administered on the first day. In the best practice, targets were set prior to the summer school, in conjunction with pupils' primary school teachers. Where this was not possible, analysis of pupils' Key Stage 2 test scripts was more useful than a test administered in the summer numeracy school. Following up targets and reviewing them were less effective. Most secondary schools had not devised specific strategies for working with summer school pupils in the autumn term although several had plans for tracking pupils' progress in comparison with others.

The role of LEA staff

176. By the end of the year, the support which LEAs offered schools on work on English and literacy across the curriculum was good in two-thirds of authorities and very good or excellent in over a quarter.

177. Initially some LEAs had difficulty appointing mathematics consultants of suitable calibre. The contribution of the LEA in relation to mathematics and numeracy across the curriculum was judged satisfactory in the autumn and showed improvement thereafter.

178. The national training for LEA staff in summer 2000 to prepare them to train schools in implementing the pilot was effective. It used good materials and overall it focused well on how to train others. It was delivered skilfully, although there was sometimes insufficient time for discussion.

179. Thereafter, LEAs provided good quality introductory training for schools supported by helpful national materials.

180. A significant number of LEA consultants began the pilot new to consultancy and many were initially tentative in approaching their role. At first, advisers were involved unevenly. LEA support was sometimes affected by discontinuity in staffing.

181. Almost all the departments and senior staff in the schools visited valued the support and training they received from their consultants. In autumn 2000, consultants started to visit lessons, work with teachers, give demonstration lessons, and run departmental training sessions. Though much of this work was found to be very helpful, the consultants' support of audits and subsequent follow-up needed to be strengthened.

182. Support in planning schemes of work in individual schools was strong. Consultants were most effective where schools were able to free staff to work with them in the school day. Consultants not only trained departments but also teaching assistants, as well as leading whole-staff meetings on literacy or numeracy across the curriculum.

183. Consultants generally did not do enough modelling of lessons. There were good examples of this but fewer than there might have been, especially to support teachers who lacked confidence in aspects of the strategy. With some notable exceptions, consultants and advisers were also insufficiently involved in lesson observation and feedback and monitoring the pilot in individual schools.

184. Consultants sometimes needed to build up their links with schools to identify good practice and offer support for improvement where it was needed most. Work needed to continue to be more sharply focused on schools where standards are relatively low.

185. In the autumn term, there were few examples of LEA structures to promote the exchange of ideas and resources. More could have been done by LEAs at an early stage to make school efforts on schemes of work and materials more economic. In one LEA the adviser helped to set up clusters of schools which shared their ideas for planning. In another case, LEA staff worked closely with all their schools in constructing agreed set of plans that were to be put on the LEA's intranet for adaptation by schools. At a later stage, structures for dissemination and discussion built up in most LEAs.

186. It was rare for LEA EMAG managers to be involved in either LEA or school level training on English and mathematics, and literacy and numeracy across the curriculum. In their visits as link advisers, they discussed the strategy with EMAG staff, but the amount of guidance and additional material offered was limited.

Appendix: Progress and Optional Tests

Progress tests

The progress tests in English and mathematics were introduced for schools to assess progress of pupils in Year 7 who had not reached level 4 by the end of their primary schooling. The progress tests were externally marked in the case of pilot schools.

There is little difference between the results in the pilot schools and the national results. This reflects the concerns raised in this report about the organisation of catch-up programmes in pilot schools, as well as concerns about the match between the progress tests and the work covered in Year 7.

Percentage of pupils who sat the tests achieving level 4 and above in 2001: pilot schools

	Boys	Girls	All
English	25	34	28
- Reading	46	51	48
- Writing	9	17	13
Maths	10	10	10

Percentage of pupils who sat the tests achieving level 4 and above in 2001: national results

	Boys	Girls	All
English	25	34	29
- Reading	45	50	47
- Writing	11	18	14
Maths	12	11	11

Optional tests

The data available on the results of optional tests in schools outside the pilot areas are not comprehensive enough to allow secure comparison. The optional tests in English and mathematics were developed as secondary school versions of the primary school optional tests (for Years 3, 4 and 5). While the progress tests were based on Key Stage 2 programmes of study, the Year 7 and 8 optional tests were linked to the new approaches to English and mathematics in the Key Stage 3 strategy. Unlike the progress tests, the optional tests were not externally marked.

Percentage of eligible pupils in the pilot schools achieving level 5 and above in 2001 Optional tests

		Boys	Girls	All
Year 7	English	44	58	51
	- Reading	39	54	46
	- Writing	38	52	45
	Maths	61	62	62
Year 8	English	42	57	50
	- Reading	44	57	50
	- Writing	37	49	42
	Maths	64	65	65

