Embedding ICT in schools – a dual evaluation exercise

Contents

Executive summary

The research for the report involved inspection of a total of 39 secondary, primary and special schools. Staff from these schools used the pilot common evaluation framework (CEF) which aims to assist schools in coming to an objective view of the extent to which information and communication technology (ICT) is embedded in their practice. They made judgements on seven 'strands': vision and leadership; curriculum; teaching and learning; assessment; continuing professional development (CPD); resources; and standards. Having completed their self-evaluations, schools were then visited by an inspector who provided judgements, against the same criteria and guidance, for comparison with those of the school.

Inspectors found that the inconsistencies between schools, noted in earlier reports, were evident in the sample. Pupils had an expectation that ICT would be a regular and significant element in their learning in only a small minority of schools. More typical was a picture in which pupils' use of ICT varied from subject to subject or from year to year. However, in general terms, the use of ICT as a tool for learning was on the increase and this report provides examples of this from the sample of schools.

The involvement of senior managers, especially the headteacher, was the most critical factor in good ICT leadership. The way in which this was complemented by effective coordination of ICT was also critical. Few schools built ICT as a tool for raising standards into their strategic planning.

Senior staff in most schools recognised the need to introduce a more systematic approach to implementing and checking the cross-curricular provision of ICT and an improved approach to the monitoring and evaluation of the impact of ICT on teaching and learning. The most effective monitoring of ICT looked not only at how staff used resources in their teaching but what use pupils made of the ICT-related opportunities on offer to them.

Most schools made at least satisfactory curriculum provision for ICT, including some balance between teaching ICT capability and its application across subjects. However, in none of the schools in the sample could ICT be said to be embedded to the extent that it was an everyday aspect of pupils' learning. The best curriculum provision provided a good balance between discrete ICT and its use across subjects. In primary schools ICT was used mainly to support English and mathematics; there was some use of ICT in other subjects but application across the curriculum was still largely undeveloped. In secondary schools there were examples of good application of ICT across a few subjects, typically in design and technology (D&T), modern foreign languages (MFL) and art and design.

Assessment was the weakest area of provision. Even where ICT work was assessed, pupils generally received insufficient feedback on how they could

improve their work. In the most effective practice, pupils knew when they were achieving well and used ICT with confidence. However, in the vast majority of schools teachers did not evaluate specifically how well pupils applied and used their ICT skills across the curriculum.

In most schools, the ICT confidence and competence of staff had improved in recent years, not just in using ICT applications themselves, but in starting to make effective use of these to engage pupils in learning. Despite this generally effective provision however, there remained much still to do in developing the application of ICT to the learning. Few schools undertook an audit of staff training needs that included effective classroom practice and how ICT could enhance achievement. The monitoring and evaluation of training, including its dissemination and impact, were generally underdeveloped.

Most schools were resourced at least satisfactorily. In all schools, there had been good progress in the provision of equipment, systems and support in the last few years, including digital projectors and interactive whiteboards. This progress was most marked in secondary schools. Most primary schools had a good range of hardware and software, including digital still and video cameras. However, many pupils did not have sufficient access to computers to support their learning across the curriculum on a regular basis. Flexible deployment of resources was the key to success in secondary schools, rather than over-investment in bookable ICT rooms. Schools generally showed a commitment to expansion through clusters and portable sets of laptops.

The level of technical support varied in all types of school. This was generally at an adequate level or better in secondary schools but varied widely in primary and special schools.

Standards in ICT capability varied, reflecting the balanced nature of the sample of schools. Although the impact of ICT on standards in other subjects was difficult to gauge and not always clear, schools made professional judgements often based on evidence from observation of individual lessons where ICT played a distinctive role in improving teaching and learning. When these examples were aggregated across a school the overall effect was reduced because ICT did not play a sufficiently consistent and regular part in pupils' learning.

ICT made an indirect impact on standards through improved opportunities for collaboration, creativity and to problem solving. Pupils were interested, enthusiastic and curious about ICT and this contributed to their engagement and motivation. This drove them to explore the potential of ICT, helped them to sustain their concentration and promoted their independent learning.

All of the schools involved found the exercise useful. It helped them to focus on where development was needed and generally engaged senior management in more in-depth consideration of ICT than hitherto. Most felt it had helped them to determine where their strengths lay and where they needed to develop.

However, many found the workload heavy and had difficulty in finding the time needed to devote to the self-evaluation. For some, the language used provided an additional hurdle.

Key findings

The impact of ICT

❒ The project highlighted continuing inconsistencies within and between schools. In particular, there was wide variation in the extent to which ICT was embedded in the work of schools, although ICT as a tool for learning was expanding in all.

❒ ICT had started to affect teaching and learning in some subjects or classes, but pupils' use varied between subjects and year groups within the schools.

❒ In most schools, ICT had not yet become integral to teaching and learning or a driver for school improvement.

❒ There were many good examples of ICT being used well to enhance teaching and learning in all types of school.

❒ Overall the schools had made most progress in resources and CPD and least in assessment.

The dual evaluation

❒ Schools generally made effective use of the criteria and guidance provided to gather informative evidence for self-evaluation. The process was most effective where large numbers of staff and pupils had been involved in providing evidence and views.

❒ All of the schools found the process of value in identifying strengths and priorities for development. They found that the exercise:

  o engaged the senior management team (SMT) in whole school ICT issues

  o was stimulating and sharpened the thinking of staff

  o gave the school a clearer view of priorities

  o resulted in evidence that was very revealing

  o gave clear guidance on how to evaluate and structured the process.

❒ Some schools found difficulties in:

  o weighing multiple statements to give balanced grade judgements

  o coping with overlap in some descriptors

  o thinking about standards when there were no comparative measures (primary and special)

- o understanding some of the terminology and language

    - o the volume of material and the time taken to undertake the exercise.

- ❒ Schools were divided on other important issues, including:

    - o the level of detail in the criteria; some schools found this very helpful while others found they were not clear enough

    - o the wording of questions; while many schools found this too difficult to share with other staff, others used them to help devise appropriate questions for them

    - o the timing of the exercise.

- ❒ Most schools involved in the project developed a clearer understanding of their strengths and a sharper focus on areas for development. Notably, in the primary schools, this has helped to raise staff expectations about the potential for the use and impact of ICT across the curriculum.

Recommendations

The government should:
- further clarify its expectations of schools with regard to the embedding of ICT in teaching and learning across subjects and make clear what provision for embedded ICT looks like
- further encourage schools to improve their whole-school provision for ICT so that they can move forward at a practical rate from their current position towards ensuring that ICT has a positive impact on pupils' learning
- expedite plans to make the 'strategic leadership in ICT' (SLICT) training courses for school leaders available to middle management and those who support schools.

LEAs should:
- ensure that all those who work with schools in an advisory, support or monitoring capacity are aware of the potential impact of ICT on teaching and learning in their area of expertise and in administration
- ensure that ICT is considered as an integral part of system-wide developments on issues of school leadership and management, teaching and learning, curriculum and assessment.

Schools should:
- combine planning for ICT developments with other important development goals, especially those involving active, independent and collaborative learning, thinking skills and inclusion
- evaluate their provision for ICT against broad headings such as those in the common evaluation framework(CEF), with particular emphasis on the views of pupils and all staff.

Part A. The impact of ICT

1.   The sample of 39 schools involved in this project comprised 16 secondary, 15 primary and 8 special schools. Staff from these schools used the pilot CEF which aims to assist schools in coming to an objective view of the extent to which ICT is embedded in their practice. Having completed their self-evaluations, schools were then visited by an inspector who provided judgements, against the same criteria and guidance, for comparison with those of the school. A further 15 'associate schools' undertook the self-evaluation but without an inspector visit.

2.   The framework has 25 criteria in seven strands: vision and leadership; curriculum; teaching and learning; assessment; CPD; resources; and standards. Grade descriptors for each criterion describe 'high', 'medium' and 'low' performance, based on inspection, research and other evidence. These have been mapped onto to the new Ofsted four-point grading system as indicated below.
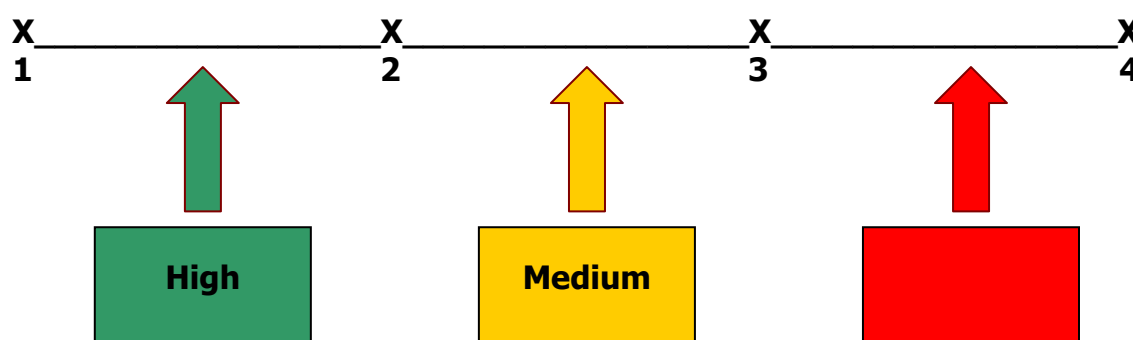
Quality descriptor and alternatives	Grade	Implications
Very good: highly effective; very rapid; well above average standards and practice	1	Worth disseminating in school and possibly beyond
Good: effective; fast; above average	2	Worth reinforcing and developing
Adequate: sound; acceptable; average and with few weaknesses	3	Adequate but has scope for improvement
Not adequate: ineffective; inadequate; slow; below average; well below average	4	Cause for concern – action/change needed

Strand 1: leadership and vision

3.   The most critical factor in good ICT leadership was the involvement of senior managers, especially the headteacher. The way in which this was complemented by effective coordination of ICT was also critical. In most schools there was a vision for ICT, although the degree of ambition varied widely. This vision was carried forward through an explicit reference to ICT in the school development or improvement plan, and usually underpinned planning for the deployment and use or resources. Only rarely, however, was this vision articulated and shared with sufficient clarity.

4.   Few schools had a strategic plan that saw ICT as a tool for raising standards. Where this was the case, senior managers had a clear overview of the quality of provision across the school and ensured that there was an ongoing debate about how ICT was used, the way in which it engaged learners and the gains in learning and teaching. A key element of the development of ICT across the school was the involvement of subject leaders or heads of department in ensuring that ICT played a full part in the teaching and learning in their subject. However, in most schools, there was inconsistency in the extent to which subject leaders were involved in such developments.

5.   Most ICT strategies included plans for developments in resources, curriculum, CPD and pupil entitlement, but in only a few were these coordinated in a sufficiently coherent way. Few schools had a strategic plan that saw ICT as a tool for raising standards.

6.   In secondary schools it was common to find ICT planning or strategy groups on which all departments were represented, and these were often effective in providing a positive steer and direction for ICT developments across the school. However, in some cases, these groups did not work within the context of broader initiatives within the school, or link whole school initiatives to departmental development plans. In a few cases such groups concentrated only on issues such as resources.

7.   In most primary and special schools, coordination of ICT was still the responsibility of a single member of staff. In larger schools, the coordination functions were shared amongst a number of staff, depending on expertise: this was helpful in ensuring that the necessary wide ranging support and management was not the responsibility of one member of staff acting alone.

8.   Senior staff in most schools recognised the need to introduce a more systematic approach to implementing and checking the cross-curricular provision of ICT. This required improved monitoring and evaluation of the impact of ICT on teaching and learning. Additionally, in many schools, it required the updating of ICT policies to promote more

explicitly the application of pupils' skills and capabilities across the curriculum as well as the use of ICT to facilitate more cross-curricular links.

9. In the schools where the monitoring of ICT was most effective, the focus went beyond how the staff used ICT in their teaching to include the use pupils made of the ICT-related opportunities on offer to them. The best practice saw schools monitoring implementation and amending strategy where this was needed. Where ICT reviews were less effective, success criteria lacked sharpness so that, for example, intended improvements in teaching, learning and standards were not quantified. In some schools, success was measured in terms of technology provision and processes, rather than outcomes in professional practice and pupil learning.

10. In a significant minority of schools, the use of ICT as a focus for performance management was very helpful in supporting ICT development. So, too, was the growing provision in larger schools of laptops for all teachers, a trend significantly boosted by recent government funding initiatives. Laptop provision came with an expectation of greater use of ICT to enrich teaching and learning.

Strand 2: the curriculum

11. Most schools made at least satisfactory curriculum provision for ICT, including some balance between teaching ICT skills and its application across subjects. However, no schools in the sample were in a position where ICT was embedded in pupils' learning to the extent that it was a frequent and natural part of their day-to-day learning.

12. The effectiveness with which schools were able to implement the ICT curriculum was largely dependent on the quality of their ICT schemes of work, the support, training and guidance for staff and the accessibility of reliable and appropriate resources as and when they were needed. Where these were good they contributed to a high level of ICT capability, which pupils developed as they progressed through the school and which they could apply progressively in a range of subject contexts.

13. The best curriculum provision provided a good balance between discrete ICT and its use across subjects. Some primary schools blurred the distinction between these in a way that was helpful to both agenda. In primary schools, most pupils' ICT experiences were progressive in terms of levels of ICT capability and mostly built on previous learning, but implementation of all the strands of ICT capability was often uneven.

14. This unevenness could also be found in most secondary schools. In the best practice, teachers included opportunities for using ICT across the curriculum in their planning. ICT also provided extension and enrichment opportunities for higher attaining pupils and was a valuable resource to

support the many and varied needs of lower attaining pupils including those identified as having special educational needs (SEN).

15. In primary schools, ICT was used mainly to support English and mathematics. There was some use of ICT in other subjects but application across the curriculum was still largely undeveloped, particularly where curriculum coordinators did not recognise this aspect of ICT as part of their remit and where there was insufficient access to ICT to support learning in other subjects. The internet was used quite extensively by older primary pupils for research in a range of subjects, while the use of interactive whiteboards (IWBs) in schools facilitated cross-curricular links.

16. In secondary schools, typically, there was good application of ICT in a few subjects, for example D&T, MFL and art. Most frequently, these covered such topics as presentational work including web page construction, web-related research, revision and accessing information from the Internet.

17. Issues in planning for progression in secondary schools included:
   • providing the statutory entitlement at Key Stage 3 and 4
   • providing adequate challenge for the most able
   • helping pupils to be critical, safe and discriminating users of ICT
   • realising consistency of experience in the application of ICT across subjects
   • developing staff awareness on what ICT capability is and how it is taught.

18. Computers were usually available to pupils outside of lesson times. These provided access for pupils to continue with projects or homework or for recreational activities, and occasionally for planned work including the promotion of independent learning.

19. The special schools in the sample generally provided at least adequate curricular provision in terms of teaching ICT skills and a few secondary pupils were working towards accreditation. In one school, pupils experienced a good spread of ICT applications including modelling and control technology. The skills developed in one lesson, however, were generally not fully used in other subjects. Schemes of work in some schools were not keeping up with developments in classrooms, lacking, for example, references to IWB use. In two schools there was no overall map of what ICT pupils would encounter in each year and subject and no requirement for teachers to plan for ICT use in lessons.

Strand 3: teaching and learning

20. There were good examples of the effective use of ICT across subjects in most schools. Often, however, it remained the case that the skills

developed by pupils were not transferred effectively across the curriculum. For example, pupils in Year 6 could word process, but this was not applied in other subject areas. Consequently, even if ICT was used in the foundation subjects, pupils' word processing skills tended to be used to improve the presentation of work in these subject areas, rather than for drafting, editing and improving the content and structure of their writing.

21. In primary schools, the use of ICT by teachers for presentations was very effective in raising pupils' motivation and extending their communication skills. In particular, the use of IWBs generally enhanced the quality of teaching and learning. Many secondary departments have identified the role and value of ICT in enhancing teaching and learning, although few have made links between ICT and broader developments in their provision such as the use of more active learning and more effective starters and plenaries.

22. There was considerable variation in the extent to which ICT enhanced teaching and learning in special schools. In one school, every classroom had an IWB in use and pupils' attitudes indicated a confidence and interest in using these facilities. Pupils' attitudes were very good in every lesson seen; they were able to work as a group despite disparate abilities, focus strongly for long periods, and were excited and eager. In another there was unanimity of purpose among teachers regarding the use of ICT in learning. Pupils' gains in learning were identified well by the teachers. ICT generally increased pupils' motivation and enabled differentiation to be achieved more readily. In other schools, however, the extent and quality of ICT use varied across the school.

23. In primary and secondary schools, the use of ICT by teachers for presentations was very powerful in raising pupils' motivation and extending their communication skills. The use of IWBs generally enhanced the quality of teaching and learning, by providing more opportunities for active and interactive learning and by enlivening visual presentation. In primary lessons, teachers used such media very effectively to enhance pupils' speaking and listening skills. IWBs also provided a powerful visual stimulus to reinforce learning objectives and to make the curriculum more relevant to pupils, as in the following example from a Year 6 mathematics lesson.

This was an excellent half hour of well planned and very focussed teaching using an interactive whiteboard. The teacher began by revising quickly the fractions represented by shaded parts of a circle. She asked effective, well focussed questions and ensured that pupils had understood by checking the answers they had given on individual white boards. Fractions were hidden until required. This progressed in difficulty as the fractions became more complex and the variations in colour grew from two to three to four. The teacher made quick and competent use of

the IWB, adding or subtracting colours in the segments. She then started to create a simple pie chart from some data – 'how we like our eggs cooked', creating a quick table from four answers then translating that into the pie chart. There then followed swift and dramatic colouring of the pie chart as she added in more data. The pupils were excited as the circle changed in colour and segment sizes. They were engaged, concentrating the whole time. A second pie chart from another programme was brought up – 'our favourite colours' with different graphics and more fields to choose from. This was a brisk development of the pie chart with questions mainly directed at the more able. Pupils then did their own differentiated examples.

24.   IWBs sometimes enabled whole groups to work together and share a common focus, as in the following Key Stage 3 literacy lesson in a special school for autistic pupils.

Pupils had to touch a word to identify digital photos. This included naming activities, identifying 'in', 'under', 'behind' etc. This was a very lively, enjoyable and fast-paced activity which was sustained for a full 30 minutes. The use of the white board with good material written by the teacher, on the basis of an in-depth knowledge of the pupils, enabled a group with widely differing abilities to work together at appropriate individual levels and support each other. The pupils worked very hard and all attended well, despite considerable individual special needs and communication difficulties. The use of the IWB enabled all to share in the activity, to comment favourably on each others' performance, to encourage each other, and for the least able pupils to learn from the successful responses of the more able pupils. Also, the teacher was able to reuse and modify material prepared for previous sessions.

25.   There were good examples of ICT enabling teachers to enliven lessons through more active approaches to learning, as the following example from a Year 4 English lesson illustrates.

The teacher had used the story 'A mad tea party' as the stimulus for the different activities. One group was using a graphics programme to design a mask for the 'tea party'. This group included a hearing-impaired pupil, whose use of ICT enabled him to be fully included in the activity. The second group was using a digital camera to take a series of photographs to create tableaux. The pupils saved their photographs to disc and the teacher then used these in a slide show while the group read part of a play. The third group was working with the teacher to film scenes from the play. These were saved onto the laptop and the pupils then put scenes in the correct sequence using editing software.

This was very good use of ICT to enrich and enhance pupils' learning in English, by helping their understanding of the structure of play scripts, how scenes are created and edited and how to add dialogue. The teacher

demonstrated very good subject knowledge and used ICT effectively to engage and motivate pupils. ICT extended the quality and range of opportunities for learning by enabling the pupils to make very good progress quickly and easily. The teacher made very good use of questions to assess pupils' levels of understanding and progress. Pupils explained their answers confidently and made very good progress.

26. The following English lesson is an example of ICT providing a helpful and distinctive focus for teachers and pupils to discuss online materials. It took place with a single pupil in a very small and specialised hospital school providing for adolescents with very severe mental health problems. One part of the school took the form of secure accommodation for extremely disturbed young people who had one-to-one education.

The pupil was working one-to-one with the English specialist teacher, studying the novel 'Of Mice and Men', largely as an exercise to develop his English language, which was limited. The teacher used a revision unit on the Internet. The study of the novel provided a suitably adult context for the language development work, and also a genuine unit of English coursework. At the beginning of the lesson, there was a useful 'reminder session' supporting the pupil in finding his way to the appropriate website. This was developing pupils' ICT capability as well as their English. The teacher had produced a clearly-laid-out prompt sheet, word processed in a large font, to make the pupil a little more independent. The use of the computer for this one-to-one session enabled the teacher and the pupil to study and discuss the material together very readily. The teacher used an excellent range of questions and prompts, as a result of which the pupil made good progress. He showed particular increases in confidence, competence and fluency when he came to use an effective 'time-line' function on the computer.

27. These good examples notwithstanding, many teachers still lacked the confidence to use ICT as a tool to raise standards, or were limited in what they could do with the resources available to them. In order to improve teaching, several issues needed to be addressed, and programmes of CPD are required in:
   - when and when not to use ICT, for example considering the need of younger pupils for concrete experiences through practical activities to support their cognitive development
   - new software and how this might be used in the classroom to enhance provision and raise standards
   - interactive use of ICT by pupils
   - use of assessment to inform planning about pupils' ability to apply their knowledge of ICT to support and enhance their learning, and thus to provide appropriate levels of challenge.

Strand 4: assessment

28. Assessment was the weakest area of provision. Even where ICT work was assessed, pupils did not receive sufficient feedback of how they could improve their work. Most teachers, with some exceptions in mathematics and English, were too easily impressed with mediocre application of ICT by pupils, accepting work that had not sufficiently extended their learning. In the minority of schools where examples of good assessment practice in ICT were found, this was not consistent across all staff. Even in those schools where a policy has been developed, assessment of ICT was often largely a matter for individual teachers.

29. Schools generally used end-of-unit assessments to track pupils' progress. In the most effective practice, pupils used ICT to develop their work following feedback from the teacher. They knew when they were achieving well and used ICT with confidence. However, in the vast majority of schools teachers did not evaluate specifically how well pupils applied and used their ICT skills across the curriculum.

30. The summative assessment of ICT capability at the end of Key Stage 3 was variable and often lacked sufficient moderation even within the school. This was often based on too narrow a range of a pupil's work and meant that the capacity of the pupils to apply what they had learnt in new contexts was not adequately measured.

31. There were some good examples of the use of digital video to record work for assessment purposes, both by staff and by pupils as part of peer assessment. Such practice was effective and could be made more widespread.

32. ICT was increasingly being used for the analysis of performance data. In secondary schools, it was common for pupils to be set targets in ICT, often based on their attainment in core subjects as shown by Year 6 SATs, and by CATS testing. However, regular feedback on progress towards targets was rare. More emphasis was needed on the use of target levels and the tracking of pupils' progress towards these and there was a need for pupils themselves to be more involved in this.

Strand 5: continuing professional development

33. In most schools, the ICT confidence and competence of staff had improved in recent years, but more so in using ICT applications themselves than in making effective use of applications to engage pupils in learning. Where practice was good, schools recognised the need to develop a structured and coherent programme of CPD that was closely allied to the overall school vision for ICT and linked to whole-school objectives.

34. Few schools maintained an audit of staff training needs that included effective classroom practice and how ICT could enhance achievement. There were examples of good quality training, including demonstration lessons provided by schools' own staff or consultants from the national strategies. In particular, the acquisition of IWBs has often been matched with good CPD. Where staff had received relevant training and support in their use, this has impacted very favourably on the quality of teaching and learning in all types of school. Even where there was good provision for CPD, there remained insufficient opportunities for staff to observe good practice.

35. Most primary schools had correctly identified the need to provide more training in ICT for teaching assistants and to ensure that all new staff received support and training.

36. CPD was a strength in only two of the special schools. In one of these, staff had taken part in a great deal of in-service training and were very well supported at an individual level by both the ICT coordinator and the technician. The impact of this was effectively monitored. In other special schools, much CPD was undertaken on a very informal and ad hoc basis. Though this was sometimes effective, its impact was rarely monitored.

37. The monitoring and evaluation of training, including its dissemination and impact, were generally inadequate in all types of school. The most effective practice was found where schools had invested in time for staff to observe each other's practice, where they were used to questioning the impact of ICT on learning and where there was sharing of good practice, ideas and resources.

38. The minority of schools with a high turnover of staff faced the additional challenge of providing a rolling programme of support to ensure that the vision for ICT continued to be understood and embraced by all teachers. In the most effective practice, new staff were inducted and supported as they developed an understanding of the school's expectations of ICT.

Strand 6: accommodation and resources

39. Most schools were resourced at least satisfactorily. In all schools, there had been good progress in the provision of equipment, systems and support in the last few years, including digital projectors and IWBs. This progress was most marked in secondary schools.

40. Most primary schools had a good range of hardware and software, including digital still and video cameras. However, many pupils still did not have sufficient access to computers to support their learning across the curriculum on a regular basis. This in turn impeded their progress.

41.   Most special schools were also well resourced, having devoted much funding to this. In two schools, there was some imbalance between the good availability of computers in the computer room and their comparative scarcity elsewhere. Wider development in one school had been inhibited by the absence of a broadband connection, leaving staff and pupils frustrated at the unreliability of the dial-up connection.

42.   Flexible deployment of resources was the key to success in secondary schools, rather than over-investment in bookable ICT rooms. Schools generally showed a commitment to expansion through clusters and portable sets of laptops. In a few schools, provision was made for all teachers to have a laptop and this had a marked impact on their willingness to use ICT in their lessons.

43.   In a small minority of primary schools, teaching and learning spaces were designed to provide easy access to ICT in shared areas or through the use of laptops during lessons. Mostly, however, accommodation did not lend itself well to the twin demands for pupils to develop their ICT capability and be able to apply this in their learning across subjects.

44.   The layout of computer rooms in secondary schools was frequently unsatisfactory, usually because there was no room for pupils to undertake work away from machines. Where there was a flexible and spacious arrangement, this enabled a greater variety of teaching and learning styles in lessons and facilitated better lesson planning in line with the ICT strand of the Key Stage 3 Strategy. In a substantial minority of schools, computers had been packed in too tightly and the rooms were cramped.

45.   The level of technical support varied in all types of school. Those primary schools which made the most effective use of ICT often had some provision for technical support. In some cases a permanent member of the support staff had been specifically trained and could assist with both technical and curriculum requirements. Teachers who lacked confidence found this level of support invaluable and were reluctant to use ICT without it. Such support also enabled the ICT coordinator to remain focussed on curriculum and staff training as opposed to non-curricular matters. In secondary schools, technical support is generally adequate or better.

Strand 7: standards

46.   ICT generally impinged on standards in other subjects in indirect ways, for example through improved opportunities for pupils to work collaboratively, creatively and to solve problems. Pupils were interested, enthusiastic and curious about ICT and this contributed to their engagement and motivation, including some who were otherwise reluctant learners. This drove them to explore the potential of ICT,

sustained their concentration and promoted their independent learning. However, this was dependent on being part of a well-planned broader context such as appropriate teacher input and support to enable them to use ICT independently and successfully.

47.   In primary schools, pupils' use of text and graphics to communicate was good, but the use of computer modelling remained underdeveloped. ICT was often used effectively to support the schools' policies on inclusion, for example in work undertaken with SEN pupils or the gifted and talented.

48.   ICT standards in secondary schools varied widely, mirroring the range of provision. In Key Stage 4, where schools made provision for GCSE or GNVQ courses, the pupils generally made progress. However, higher attaining pupils were sometimes operating at a lower level than that of which they were capable, especially where they had access to sophisticated ICT at home. Where some or all of a cohort of pupils had to rely on the vagaries of using ICT in other subjects in order to progress, this conspicuously failed, despite some very good isolated experiences. The successful implementation of the Key Stage 3 strategy in ICT in some schools created a challenge for sustaining progress in Key Stage 4.

49.   In the small minority of primary lessons involving ICT where it did not contribute to raising standards, this was mainly due to an over reliance on the technology to provide the teaching as opposed to using ICT as a tool to support learning and reinforce what was being taught. ICT was often used effectively to support the schools' policies on inclusion, for example in work undertaken with SEN pupils or the gifted and talented, and was beginning to impact positively on standards.

50.   Good examples of high standards were found in particular aspects of ICT. For example, in data logging, the use of ICT to provide a quick set of results for analysis saved time and enabled pupils to focus on important concepts more quickly, as the following top set Year 11 physics lesson shows.

The lesson reinforced work on momentum with four practical investigations. These all involved the principle of conservation of momentum, using a set of laptops with sensors attached, and moving trolleys on rails. The readings were programmed to feed into a spreadsheet application, which pupils could then use to analyse the data, e.g. to introduce extra variables and to illustrate the results graphically. The results were recorded by pupils in computer tables, to be written up later with conclusions.

This was a very well organised lesson. The teacher had very high expectations and a good rapport with the class. Pupils were not only

motivated but able to organise themselves quickly with the apparatus and get started. Some of the analyses undertaken by the ablest pupils were of the highest standard and showed budding young scientists enjoying their work and deriving meaning from experiments about changes in velocity, energy and momentum.

Without ICT this lesson would not be feasible in the time available. It would take far too long to obtain a series of readings and average them to yield one trolley's momentum let alone two, and certainly not two trolleys in two or three investigations. Some groups completed three by the end of the first 50 minutes of a double period; the majority completed two. ICT was critical to the fast pace of results here.

51. Standards had been raised in D&T by using design software to enable pupils to visualise their designs in three dimensions, as in the following Year 10 example.

Pupils were developing skills in using a 3D design package to design and model a case for a moisture alarm as part of an Electronics project. During the introduction, the teacher recapped some of the common functions on the toolbar for the software. He made good use of the question and answer session and the pupils responded well. The teacher's high levels of competence in the subject and in the use of the software to enhance the teaching and learning were key factors.

The teacher moved the lesson along at a good pace. He used the IWB effectively throughout the lesson to demonstrate skills and techniques which applied to the pupils' own work. The pupils made good progress. They worked on the set task with interest and concentration towards a model of their own design for housing a print circuit board. The use of the software and its application to their own design work also extended their knowledge, skills and understanding in ICT.

The use of ICT had a major impact on the quality of teaching and learning. It enhanced the standard and quality of work in the lesson and in the overall project by enabling pupils to visualise their designs in three dimensions.

52. These examples show the potential of ICT, both in motivating pupils and enabling them to undertake tasks more effectively and thus reach higher standards. The issue remains the inconsistency of application of ICT within schools and between subjects and individual teachers.

Part B. The dual evaluation and common framework

53. The project caused most schools to evaluate their practice more carefully and in greater depth. Senior managers and ICT coordinators

generally found the CEF a useful tool for self-evaluation due to its breadth and structure. All had found the process to be of value in developing their monitoring and review processes and in moving their thinking about whole-school ICT issues. Schools generally demonstrated a realistic view of their performance against the criteria. As a result they are more aware of the strengths and weaknesses in their school and clearer about what they needed to do to sustain progress. Often, the process itself was developmental, as in this primary school example.

The headteacher, deputy headteacher and ICT coordinator had discussed and agreed their vision for ICT, but this had not then been properly shared or discussed with the rest of the staff. Communicating these ideas was an obvious next step before the vision could start to be implemented. The headteacher then realised that this applied to other areas of the school and has since begun using the weekly staff meetings to develop a whole-school vision which is understood and embraced by all.

54. Where schools involved most or all staff in the self-evaluation process, this raised the awareness of less experienced colleagues, promoted good professional discussion and resulted in staff having a shared understanding of their school's priorities. All schools found the evidence gathering useful, although time-consuming. This helped some schools to review, reassess and identify those factors which impact on raising standards and those which do not. A good example of this was found in one primary school where it had been decided not to purchase additional IWBs. Having gathered a substantial amount of evidence showing that their best practice was in the classes where these were being used, the purchase of additional IWBs then became a priority.

55. Using a framework of this sort is optional and provides one way of structuring a schools' self-evaluation. The CEF encouraged schools to monitor not only how staff used ICT in their teaching but what use pupils made of ICT-related opportunities. Most schools took into account the views of pupils as part of this process, and this ensured that the school's view of what it provided was tempered by the reality of the pupils' experiences.

56. Schools generally demonstrate a realistic view of their performance against the criteria of the CEF. No schools had yet made changes to their approach by the time they were inspected, but there were signs of progress. In some primary schools, coordinators of subjects other than ICT were more aware of the need for them to take responsibility for the ICT content within their subject areas. In others, teachers had become more aware of the need to look for opportunities to use ICT at the planning stage. At the post-project conference in January 2005, many delegates reported that the process had been influential in helping to

shape future ICT strategy in their school and approaches to self-evaluation.

57. One school whose headteacher had been involved in the planning for the CEF at an early stage applied the principles and generic content of the CEF to all other subjects, by removing the word 'ICT' and replacing it with other subject names. Senior staff in this school were very enthusiastic about this approach and were keen to continue its use across all areas of development. They used a spreadsheet to demonstrate how they had progressed in their self-evaluation against all 25 criteria over time, as shown below.
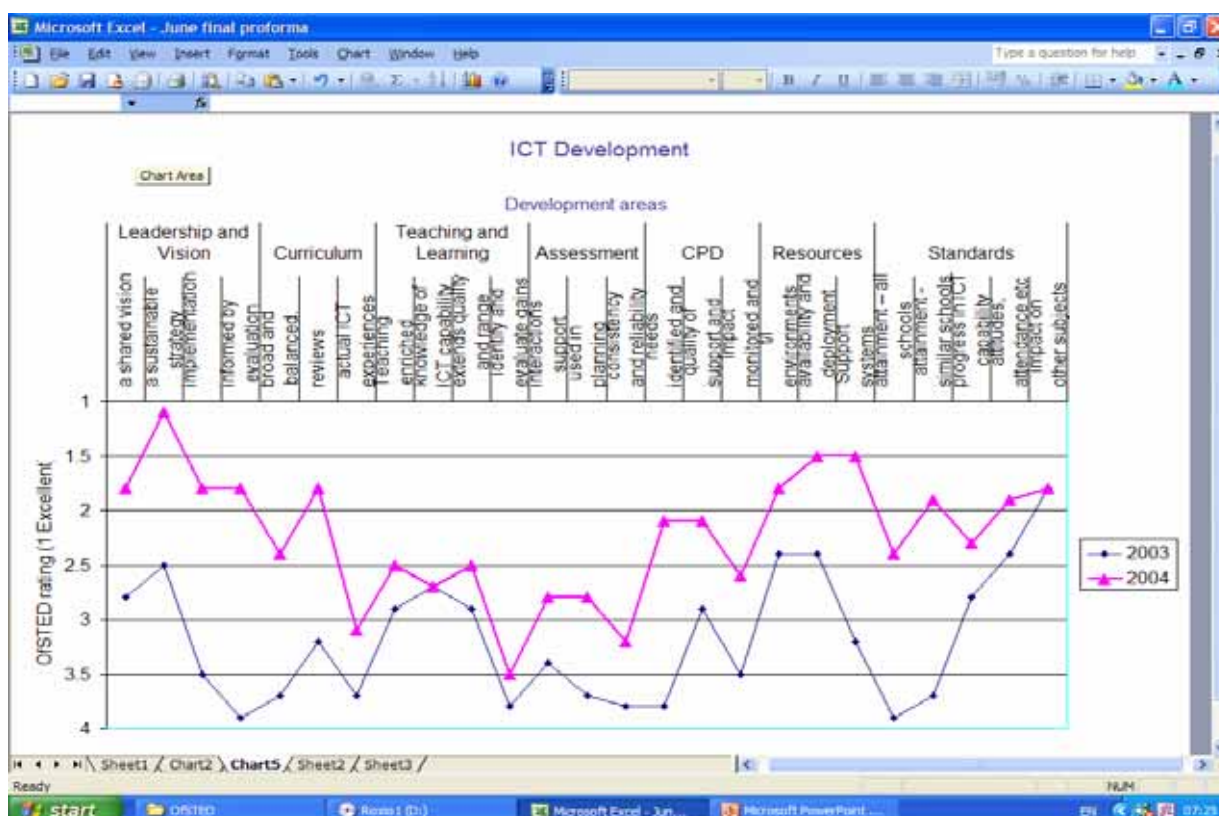
58. Although schools found it difficult to gauge the impact of ICT on other subjects, they nevertheless made professional judgements about this. Their evidence for this often came from observation of individual lessons where ICT played a distinctive role in improving teaching and learning, and many such examples were seen. But when these examples were aggregated across a school, the overall effect was reduced because most schools continued to find it difficult to ensure that ICT played a consistent and regular part in pupils' learning.

59. Most special schools had no means of comparing pupils' standards in ICT with those in similar schools, although one was developing its partnership with other schools to form an opinion of how well their pupils were doing. A minority had no systems for assessing or reporting

pupils' progress. In one school, records of achievement showed that pupils made considerable gains in their ICT capability, especially when looked at in the light of their physical access difficulties, the level of English as an additional language in the school, and the lack of computers at home. In most special schools, the most significant improvement was in pupils' attitudes, concentration spans and motivation. This was particularly noticeable in emotional and behavioural difficulties schools.

The common evaluation framework

60. On the whole, schools found the exercise to be a valuable one, but the pilot highlighted a range of ways in which the CEF and guidance could be improved. One feature emerging was the need for slightly different versions of the guidance for primary, special and secondary schools. Some primary schools, for example, found the CEF not sufficiently focused on the primary phase.

61. The sheer volume of material was also a problem for schools and there was felt to be a need for simplified guidance or 'quick start' guides. A consistent and related problem encountered by schools was the time-consuming nature of the process. Self-evaluation was an important area for schools and is now a significant component in Ofsted school inspections. But the process needs to be clearly manageable within the resources available and should not divert staff from the core business of educating children. For some schools, the suggested approaches to self-evaluation, such as interviewing pupils and staff, added to their repertoire of techniques. In ICT particularly, it is important to gauge what pupils are actually doing as this is often quite different from what the school intends.

62. Schools found various benefits from using the CEF:
  • it provided clear guidance and a structure of how to evaluate
  • it was a stimulating
  • it was very revealing and provided a clearer view of priorities
  • it engaged SMT and sharpened thinking
  • it helped in devising questions for other staff.

63. Where staff had difficulties in making judgements, some made very good use of websites such as those for the British Educational Communications and Technology Agency (Becta) and the National Association of Advisors for Computers in Education (Naace) to help them to identify in greater detail their strengths and weaknesses and plan future developments for ICT.[1] Among the other difficulties found were:

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[1] In January 2004, NAACE merged with MAPE, a primary community, and CEG, a secondary community. Naace is now used to describe all of this membership, beyond just advisors.

- the volume of background material
- some of the terminology
- for primary and special schools, gauging standards as there are no national measures and few have any local measures with which to compare
- making grade judgements where criteria included multiple statements in the associated descriptors.

64. Areas where schools had widely differing opinions concerned the timing of the exercise and the specificity of the criteria. Some schools were content to rephrase questions for individual staff members, while others felt the language to be a barrier.

65. The headteacher from a successful school stated that:

    All of the developments since the school's involvement with the project would probably have happened anyway. However, DEPICTS forced the pace and the CEF provided a good structure, which has helped the school to make rapid progress.

Notes

1. This report is based on the 'dual evaluation of the permeation of ICT in schools' project (DEPICTS), which involved a small sample of schools. Senior staff from these schools were trained in the use the common evaluation framework (CEF) which aims to assist schools in coming to an objective view of the extent to which ICT is embedded in their practice.

2. The framework covers policy, planning and practice to maximise the potential of ICT to enhance all aspects of a school's work, including its impact on standards. It was developed by representatives from a wide range of government and other agencies, as well as schools. The framework is provided in annex 1. Each criterion is supported by grade descriptors, identifying high, medium and low performance, based on inspection, research and other evidence.

3. These were mapped onto to the grading system in use at the time for the pilot of the new Ofsted inspections so that a comparison could be made between the high/medium/low grades and the 1–4 scale used in school inspections.

4. Forty schools were selected to provide as balanced a sample as possible and were invited to take part in the project. About 20% of those approached declined to be involved and the sample was augmented until there was a full complement. Participation involved the schools in a process of self-evaluation between June and October 2004 followed by a one day visit from an HMI or additional inspector to provide an external

view. One school had to withdraw before the project began due to a late change of senior staff. A further 15 schools volunteered to be 'associate schools', undertaking the self-evaluation but not receiving an inspection visit. Staff from Becta visited some of these schools in order to discuss the ways on which staff had used the CEF and their reactions to it.

5.   Senior managers with ICT responsibility from the schools attended an initial training session in June 2004 in which they were given an opportunity to familiarise themselves with the guidance for using the CEF. During the training, delegates were reminded that they had some flexibility in the way they conducted their self-evaluation but were encouraged to involve as many other colleagues as possible. Several documents were provided to support the process, including a list of possible evidence sources. Schools were asked to complete an audit profile identifying strengths and areas for development in each strand as well as a grade profile. This grade profile provided points within each grade to allow for some additional interpretation, although this was intended to be impressionistic rather than exactly defined (see annex 2).

6.   When inspectors visited schools in the second half of the autumn term in 2004, they observed 78 lessons, scrutinized pupils' work and school planning documents and held discussions with headteachers, ICT coordinators and teachers, and with groups of pupils. They completed the grade profile so that the grades of the inspector could be compared with those of the school.

Further information

As a result of a post-project conference in which representatives of the schools involved considered possible developments, the framework and guidance have been subject to revision and will in due course appear on both the Ofsted website (www.ofsted.gov.uk) and that of Becta (http://www.becta.org.uk/leaders/school_leaders.cfm). The CEF is also making an important contribution to the planned national guidance for school improvement in ICT, coordinated by Becta, and to the related ICT quality mark.

Annex 1. The common evaluation framework criteria (as at the time of the project)

Strand 1. Leadership and vision

1a   A shared vision recognises the potential of ICT to achieve the school's aims and aspirations.

1b   A sustainable strategy incorporates staffing, ICT resources and curriculum planning to meet the vision.

1c   Implementation of the strategy is managed, coordinated and monitored across the school.

1d   The vision and strategy are informed by an evaluation of implementation and of developments in technology and practice in the wider world.

Strand 2. Curriculum

2a   The planned ICT curriculum is broad and balanced.

2b   The school reviews and updates its whole curriculum in the light of developments in technology and professional practice.

2c   Pupils' actual ICT experiences are coherent, balanced and consistent across year groups and progressive over time.

Strand 3. Teaching and learning

3a   Teaching is enriched and enhanced through informed use of ICT.

3b   Teachers' expectations of pupils' use of ICT for learning are informed by knowledge of their ICT capability and patterns of access to ICT.

3c   ICT extends the quality and range of opportunities for pupils' learning.

3d   Teachers identify and evaluate the gains in teaching and learning through using ICT.

Strand 4. Assessment

4a   Where ICT is being used, interactions support pupils' learning.

4b   Formative assessment evidence and data are used in planning teaching and learning.

4c   Systems and processes are in place to ensure the consistency and reliability of summative assessment across the school/team.

Strand 5. Continuing professional development

5a   School and individual needs have been identified and addressed.

5b   The quality of support and training promotes effective use of available resources.

5c   The impact on practice is monitored and evaluated and the results used to inform future development.

Strand 6. Resources

6a   The design of teaching and learning environments enables ICT to be used effectively and in line with strategic needs.

6b   The availability and deployment of ICT resources reflects the strategic needs.

6c   Support systems and their organisation ensure that ICT resources optimise staff and pupils' use.

Strand 7. Standards

7a   Pupils' attainment in ICT capability is high with reference to all schools nationally.

7b   Pupils' attainment in ICT capability is high with reference to the school's own context.

7c   Pupils make good progress in ICT capability.

7d   Use of ICT has a beneficial impact on: attitudes, behaviour, motivation, attendance.

7e   ICT has had a positive impact on pupils' standards in other subjects.

Annex 2. The grade profile

HMI	
SCHOOL	

Position the cursor and use **ctrl+p** to mark the point **anywhere** along each line where you have graded your school.
N.B. It is a full scale (see example, below).

If you change your mind use **ctrl+q**.
HMI should use ctrl+a to mark grade.

high	medium	low

1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3.0 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4.0

Example

1a	a shared vision	1	2	3	4
1b	a sustainable strategy	1	2	3	4
1c	implementation	1	2	3	4
1d	informed by evaluation	1	2	3	4

Strand 1

1a	a shared vision	1	2	3	4
1b	a sustainable strategy	1	2	3	4
1c	implementation	1	2	3	4
1d	informed by evaluation	1	2	3	4

Strand 2

2a	broad and balanced.	1	2	3	4
2b	reviews	1	2	3	4
2c	actual ICT experiences	1	2	3	4

Strand 3

3a	Teaching enriched	1	2	3	4
3b	knowledge of ICT capability	1	2	3	4
3c	extends quality and range	1	2	3	4
3d	identify and evaluate gains	1	2	3	4

Strand 4

4a	interactions support learning	1	2	3	4
4b	used in planning	1	2	3	4
4c	consistency and reliability	1	2	3	4

Strand 5

5a	needs identified and addressed	1	2	3	4
5b	quality of support and training	1	2	3	4
5c	impact monitored and evaluated	1	2	3	4

Strand 6

6a	t/l environments	1	2	3	4
6b	availability and deployment	1	2	3	4
6c	Support systems	1	2	3	4

Strand 7

7a	attainment – all schools	1	2	3	4
7b	attainment - similar schools	1	2	3	4
7c	progress in ICT capability	1	2	3	4
7d	attitudes, attendance etc	1	2	3	4
7e	impact on other subjects	1	2	3	4