Information and communication technology in primary schools

This report on primary information and Communication Technology (ICT) is the last in the series published by Ofsted over several years, based on evidence from whole school inspections and surveys by HMI. It draws on data from Ofsted inspections from September 2003 to July 2005. The report also reflects upon changes since Ofsted inspections began, referring to subject issues identified in Primary education: a review of primary schools, 1994–98, and inspection judgements from 1998/99. From September 2005, subject evidence will be gained from qualitative inspections of a small sample of schools, and future methods of reporting will reflect this change.

Main findings

- Two thirds of schools have made significant improvements in ICT provision when compared with their previous inspections.
- Pupils in half of schools achieve well in ICT, but achievement continues to be unsatisfactory in one school in ten – a considerably worse figure than in most subjects.
- ICT provides good opportunities for independent and collaborative work, and this is reflected well in pupils’ work in the large majority of schools.
- The quality of pupils’ work in class is rarely reflected in their folders of completed work and insufficient attention is paid to this.
- Teaching is good or better in three fifths of schools and unsatisfactory in less than one in twenty.
- Less than a third of schools assess ICT capability well and almost one fifth either fail to do so or do it poorly.
- Almost all teachers are now confident to teach the National Curriculum in ICT, but many still find difficulties in helping pupils to apply what they have learned to work in other subjects.
- Teaching assistants (TAs) are an important factor in success with ICT; three quarters of schools now make good use of support staff.
- The widening diversity in provision continues; while the majority of schools make effective use of their resources, there remain a small minority of schools that do not.
- This diversity is also reflected in the use of ICT across subjects; this is growing steadily, but the extent and frequency of use vary widely.
- Effective monitoring and evaluation are needed if these issues are to be addressed.

Overview and trends in primary information and communication technology since 1998

Figures 1–3 show the improvements in pupils’ achievement, the quality of teaching, and subject leadership and management since 1998.

Figure 1. Achievement in information and communication technology in primary schools – 2003–05 and 1998/99.
Figure 2. Teaching in information and communication technology in primary schools – 2003–05 and 1998/99.

Figure 3. Leadership and management in information and communication technology in primary schools – 2003–05 and 1998/99.
The picture in primary ICT has improved considerably since 1998. At that time, pupils’ achievement was good in only one school in five; this has now risen to just over half of schools. Similarly, the quality of teaching has risen markedly. In 1998–99, ICT teaching was good in one third of schools, compared with three fifths in 2005. The proportion of schools where teaching was unsatisfactory has fallen from one in five to less than one in twenty.

There have been three main contributory factors to this improvement. First, the funding that schools received under the National Grid for Learning – and later the Standards Fund – has meant that the ICT resource base has grown to unprecedented levels. This has improved access and provided schools with the facilities to provide for the teaching of ICT to large groups – the lack of which was a clear inhibitor to progress in 1998. The average expenditure on ICT rose from £10 to £11 per pupil between 1994 and 1998. In the DfES/Becta’s ICT in schools survey 2004, the average expenditure was £69 per pupil. The average number of pupils per computer in 2004 was 7.5, compared with 17.6 in 1998. Almost all primary schools are now connected to the internet with 30% having broadband connections.

Increasingly, too, schools are getting some technical support, and, where this is effective, the impact is often a major leap in staff confidence and a greater willingness to use the resources. Overall, therefore, resources for ICT have been transformed, although national averages conceal wide variations: one school inspected this year still has 21 pupils to each computer and there are some schools where the poor reliability of the resources hinders progress.

The second factor has been the support provided by the Qualifications and Curriculum Authority (QCA) Framework for teaching ICT, which has provided schools with security in their curriculum planning. This is linked to the third factor – the growing confidence of the teaching force. The 1998 review said that:
...for many teachers with little access to ICT at home, the rapid pace of technological change has presented challenges that it was not easy to meet.

This has changed considerably. Although the lottery-funded national training scheme inadequately addressed broader issues of the application of ICT in teaching and learning, it was more successful in familiarising teachers with common applications. For many teachers, confidence has also been boosted by in-house support from their ICT co-ordinator, the Laptops for Teachers scheme as well as through the support of Local Education Authority (LEA) ICT teams. LEA support has been most effective where it has extended to in-class support for individual teachers.

The quality and range of pupils' work has also increased. In 1998, it was noted that pupils were adept at using aspects of word processing and that:

*It is not now unusual for pupils to manipulate and mix graphics and text in a way that was rare and technically more complex in 1994: the visual quality of some of the work produced is uneven but improving.*

Although there continues to be variation in the extent and quality of such work this is now commonplace and typically includes pictures gleaned from internet searches. Pupils also present their work using a wider range of applications, including multimedia presentations, animations and digital video, with these sometimes combined. The widespread adoption of the national scheme of work, just starting to appear in use in 1998, has also meant that pupils now meet other applications more systematically. However, it is still uncommon to find pupils using word processing to draft and redraft extended writing and control remains the area of the ICT curriculum that is most frequently the weakest.

In spite of this undoubted progress, the gap between the best and worst provision is growing. This is less so in terms of ICT achievement and teaching, but is most noticeable in the extent to which pupils apply their ICT capability to their learning across the curriculum and in the level of imaginative application. At one end of the spectrum pupils expect to make appropriate use of ICT on a daily basis - and have these expectations met. In such schools, pupils understand how ICT helps their learning - for example in quickly accessing information from the internet or in helping them to consider how their writing or presentations might be adapted for particular audiences. They also understand the need to assimilate information gleaned from the internet and to re-present it in their own words. They use digital still and video cameras to express their ideas and enhance a range of their work and gain insights into the power of visual media. At the other end of the spectrum, pupils gain little or no benefit from the richness and diversity afforded by ICT resources or from their own developing ICT capability in their learning in other subjects. For this group, ICT lessons exist in a vacuum and do not help them grow as learners.

While the national guidance has proved a powerful aid to teachers in developing their schemes of work for ICT, this has not always enabled them to make links between what pupils learn in ICT and what they do elsewhere. In the more successful schools, the work that pupils undertake using ICT in other subjects
is often more exciting and interesting than what they do in ICT lessons - which can be prosaic and formulaic. In the spirit of the DFES’s *Excellence and enjoyment*, the challenge to primary schools now is to bring the excitement so often present in the cross-curricular work into their planning for progress in ICT capability.

The 1998 review linked the lack of assessment of ICT capability with the lack of systematic teaching of ICT. Despite the major improvement in the latter, assessment continues to be highlighted as a frequent weakness. With a ‘new’ subject like ICT it is important that teachers understand the expectations of pupils at different National Curriculum levels. Without this, it is difficult to plan for progression. The widespread use of the QCA scheme of work means that assessment is generally made against the expectations of the units themselves. This does not always help teachers to see how pupils might be helped to move their attainment forward on a wider front. There are good examples of LEA support for assessment and some schools have made effective use of support materials such as those on QCA’s www.ncaction.org.uk website.

The advent of digital projectors and interactive whiteboards (IWBs) has also been a significant feature of recent years. According to the DfES/Becta survey, more than six schools in ten now have an IWB and the average number per school is two. Without doubt this has improved, often radically, the visual quality of teachers’ presentation. IWBs are attractive to children; they gain and retain their attention very effectively. Pupils also gain much from making use of IWBs themselves, for example in dragging number lines to make equivalent fractions or in grouping words with the same initial sound. But there are also pitfalls in using IWBs. Sometimes teachers over-use the resource, resulting in insufficient variety of approach, while it is also possible for the focus of planning for the use of ICT across subjects to shift from learning to teaching.

**Issues in primary information and communication technology in 2005**

**Improving the monitoring and evaluation of information and communication technology**

In over three fifths of schools, the leadership and management of the ICT coordinator are good. The role of ICT coordinator is demanding, given the relatively recent arrival of ICT as a subject and the fact that the technology is constantly evolving. Generally, coordinators have worked effectively to ensure that schemes of work are implemented and that staff are supported in developing their ICT capability and their understanding of the National Curriculum requirements.

The area of work most frequently identified as in need of development is the monitoring and evaluation of what happens in the school. This is often a question of time, as many coordinators are not provided with opportunities to observe lessons. There is growing use of scrutiny of pupils’ work but this is still far from general. By gathering the ICT work of pupils together and looking at this across a year group or key stage, much can be learned about provision. Such approaches can also help to focus quickly on other important issues, especially the need for teachers to understand the characteristics of different
National Curriculum levels. Folders of pupils' completed work, whether in hard copy or virtual, often fail to reflect the quality of what happens in lessons and less attention is paid to this in ICT than in other subjects.

Where teachers and pupils pay due attention to portfolios of work, this can help to improve achievement as in the following example:

Good management of the subject ensures that provision is evaluated well by checking pupils’ work, monitoring teachers’ planning and observing their lessons. The school maintains useful pupil portfolios. These are used to assess achievement and progress throughout the school. Targets are discussed with pupils and provide the teachers and the subject co-ordinator with a clear understanding of pupils’ strengths and weaknesses.

The strategic leadership of whole-school information and communication technology

Important as the role of the ICT coordinator is, if schools are to more fully develop the broader application of ICT to teaching and learning, then the leadership of the headteacher is critical. For pupils to gain the most from the resources available, staff need to work within a clear vision of how this might happen and need strong leadership in developing their own capacity to develop their use of ICT and to evaluate this more critically.

In those schools with good strategic leadership of ICT, the headteachers have been key to developments. They have presented a clear vision and worked with colleagues to develop effective practice, by sharing the successes and failures when trying out new ways of working with ICT. This has engendered a reflective culture in which staff can identify the gains in learning the uses of ICT and can develop confidence in knowing when ICT makes a difference and when it does not.

In these schools staff and pupils are expected to make effective use of ICT. They are supported in this through personal access to ICT as well as in lessons. The advantages of IWBs do not divert them from the important focus on what the pupils are learning and what they are able to do with the technology. Headteachers in these schools know when the staff can work together to develop provision and when they need outside help, for example from their LEA support team.

While headteachers can learn much from the evaluation of practice within their own school, especially where they have strong and knowledgeable ICT coordinators, many need greater awareness of how ICT can impact on teaching and learning and may need to look beyond the school for this. It is difficult for headteachers to develop a vision for ICT without having good examples of how it can influence learning. The Strategic Leadership in ICT (SLICT) courses, run by NCSL and Becta, are increasingly providing headteachers with exactly such opportunities.

Widening the use of information and communication technology across subjects
Many schools have made important progress in their delivery of the ICT programmes of study, but are not yet able to extend this provision by identifying sufficient suitable contexts in other subjects where pupils' ICT capability can be applied, consolidated or extended, or where the use of ICT simply enhances the teaching and learning. This often reflects a culture in which such opportunities - even for straightforward applications - are simply not recognised. In one school, for example, an inspector commented on missed opportunities to develop and extend pupils' basic skills by using computers to write stories; and in another there was limited evidence of data handling or graphs in science and geography.

Pupils in about half of schools make some use of ICT in English and mathematics; in science and art, the same is true in just under half of schools. The other subjects where ICT is used most often are history, geography and music. The use of computer applications to develop thinking and mathematical skills is, however, growing and there are numerous examples, such as the use of spreadsheets with Year 6 pupils to investigate the relationship between length, breadth, area and perimeter, which, 'supported by good questioning, maximised pupil involvement and ensured that all pupils achieved well'.

Good application to English and literacy work often involves the notion of audience. The ease with which text can be manipulated and edited means that pupils can develop their understanding of what the reader needs. For example, in one school, Year 6 pupils produced interactive books for Key Stage 1 pupils. In addition to applying their ICT capability, this significantly enhanced their understanding of writing for different audiences.

The use of digital still and video cameras has given a considerable boost to many pupils throughout the age range, allowing them to express themselves visually in a way that was not possible before. The technology allows them to experiment with different shots and effects. An example of sophisticated use of cameras involved Year 4 pupils who photographed the folds in cloth to establish the effects of light and shade.

At a time when teachers are discovering the most appropriate uses of ICT capability across the curriculum, some are fortunate in being able to draw on the particular expertise of teaching assistants (TAs). In one case, for example, a TA had attended a course in animation. She successfully introduced Year 6 pupils to the software so that they were quickly able to learn the basic techniques and produce simple animations. They were highly motivated by these results and this spurred them to further, more complex work.

What remains important in considering pupils' ICT diet in a school is the balance between their achievement in ICT capability and the extension of this by applying what they have learned to new contexts in other subjects. This should not be confused with the equally valid use of the medium of ICT in pursuit of learning objectives in other subjects.