

ICT in schools 2008–11

An evaluation of information and communication technology education in schools in England 2008–11

Since the Education Reform Act of 1988, information and communication technology has been compulsory for all pupils from 5 to 16 in maintained schools. This report draws on evidence from the inspection of information and communication technology in primary, secondary and special schools between 2008 and 2011. The use of ICT is considered as both a specialist subject and across the wider school curriculum.

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Executive summary

This report draws on evidence from the inspection of information and communication technology (ICT) in 167 primary, secondary and special schools between 2008 and 2011. The use of ICT is considered both as a specialist subject and across the wider school curriculum. References are also made to relevant findings in other recent Ofsted publications.

Part A reports on the quality of the provision of ICT in primary and secondary schools and its impact on achievement and standards. Part B explores seven issues arising from the survey evidence which focus on: the impact of the use of assessment on pupils' achievements and future success; the curriculum and qualifications in Key Stage 4; professional development of staff; e-safety; use of virtual learning environments; availability of ICT resources; and securing best value.^{1,2}

The teaching of ICT was good or outstanding in nearly two thirds of the primary schools visited, with many teachers and teaching assistants increasingly confident and able to support pupils effectively. There were weaknesses in the teaching of more demanding topics such as data handling or control, but in many of the schools this gap had been identified and was being addressed.

The position was less positive for ICT in secondary schools, with just under half of the schools in the survey judged good or outstanding. The proportion of secondary schools in the survey in which teaching was judged to be good or outstanding was no better than that in the previous survey.³ Weaknesses included limited teacher capability in key topics such as programming; students repeating work from previous years; and lack of attention to the needs and interests of more able students.

Many of the primary and secondary schools visited were not tracking the progress of pupils effectively in both specialist ICT classes and across the curriculum. This led to teachers and pupils lacking an understanding of current performance and what was needed to improve.

Pupils with special needs and/or disabilities were well supported in the ICT lessons observed and were able to make good use of ICT adaptations in school and at home. In most cases this enabled them to achieve in line with their school peers.

¹ Throughout this report, 'pupils' refers to Years 1–6 and when discussing both primary and secondary schools. 'Students' is used for young people in secondary schools.

² A virtual learning environment (VLE) is a virtual classroom which allows teachers, pupils and parents to communicate with each other online. Information, learning materials, homework and assessments may be provided.

³ *The importance of ICT: information and communication technology in primary and secondary schools, 2005/2008* (070035), Ofsted, 2009; www.ofsted.gov.uk/resources/070035.

The survey reinforced concerns raised in the last ICT report about the curriculum and the qualification routes experienced by many students in Key Stage 4. These often failed to meet the needs of students. In these schools, those students who had not chosen an examination course in ICT did not follow the National Curriculum programme of study. Where vocational courses were chosen, the modules selected by the school narrowed the learning and limited the achievement of the students. Important topics such as control technology or data handling were not given sufficient attention or were missed out completely. In 30 of the 74 secondary schools visited, nearly half the students reached the age of 16 without an adequate foundation for further study or training in ICT and related subjects. There were few examples of schools engaging with local IT businesses to bring relevance and context to classroom studies.

Nationally, the numbers of students entering for GCSE and A level in ICT subjects has continued to fall since 2007. The number of students entering for vocational awards in ICT subjects has increased considerably over the same period. Despite better performance in examinations than boys, fewer girls chose to continue to study ICT in Key Stage 4 and beyond.

The majority of primary school leaders had a clear understanding of the contribution of ICT to their schools' wider improvement. There were regular audits of staff training requirements and good support for meeting the needs of teachers and teaching assistants. Although there were examples of exciting and ambitious vision for ICT in the outstanding secondary schools, the leadership and management of ICT in half of the secondary schools were found to be no better than satisfactory. In both primary and secondary schools there was often insufficient coordination of ICT learning in other curriculum areas and lack of support for staff in teaching more demanding topics. Few of the schools assessed systematically the impact of ICT on pupils' achievements although many headteachers were convinced that their investment in ICT was making a key contribution to improving outcomes.

While e-safety had been promoted effectively in all the schools visited as part of the survey, several of them had reported incidents of attempts to contact pupils inappropriately. In discussions with inspectors, the issue of under-age use of social networking sites arose frequently, underlining the importance of schools continuing to maintain e-safety as a priority for staff training and awareness-raising with parents.

The schools visited show that there have been changes in the pattern of ICT use compared with the primary and secondary schools seen in the previous survey. Throughout many taught subjects in the schools visited for this survey, there was a move away from dedicated computer suites and a growing emphasis on laptops and handheld devices. Virtual learning environments had been installed in most of the schools visited. These changes, where deployed effectively, have enriched learning across the curriculum and studying at home. Commissioning and procuring the right ICT infrastructure, equipment and resources had become a bigger challenge for schools as their level of ambition for ICT had grown. Given the increasing emphasis on using ICT to support studying at home, many of the schools recognised the issue

of equal opportunities, and were starting to devise strategies to provide for disadvantaged children whose families might not have computers and access to the internet.

Key findings

- The overall effectiveness of ICT was good or outstanding in over two thirds of the primary schools visited. In contrast, just over a third of the secondary schools visited were considered good or outstanding for the overall effectiveness of ICT. Many of the weaknesses seen in the secondary school sample, including weak use of assessment and the degree of challenge posed by the Key Stage 4 vocational curriculum, echo findings similar to those of Ofsted's previous ICT report.
- Pupils' achievement in ICT was good or outstanding in over half of the primary schools visited over the three years of the survey. Achievement was good or outstanding in 29 of the 74 secondary schools visited, and was inadequate in almost a fifth. Achievement in the secondary schools was adversely affected by the lack of effective challenge for higher-attaining students and poor coverage of key aspects of the ICT curriculum, especially at Key Stage 4.
- Teaching of ICT was good or outstanding in nearly two thirds of the primary schools visited. Teachers and teaching assistants were increasingly confident in their own use of ICT and able to support pupils more effectively. Weaknesses remained, however, in the teaching of more demanding aspects of ICT such as control and data handling. In just under half of the secondary schools visited, teaching and learning were good or outstanding.
- The use of assessment was a considerable weakness in both the primary and secondary schools visited. Pupils' use of ICT in other subjects was only occasionally tracked or recorded. For those students in Key Stage 4 who were not receiving specialist ICT teaching there was no systematic record of their learning in ICT and no means for teachers or pupils to know whether they had gaps in their knowledge.
- The ICT curriculum and qualification routes provided by nearly half of the secondary schools surveyed were not meeting the needs of all students, especially at Key Stage 4. In these schools a single vocational examination course was taken by all students, limiting challenge to the more able, or ICT was offered as an option to some students with others not receiving the full National Curriculum. As a result, in 30 of the 74 schools visited nearly half of the students reach the age of 16 without a sound foundation for further study or training in ICT and related subjects.
- Very few examples were seen of secondary schools engaging with local IT businesses to bring the subject alive for their students. This was a particular issue for girls, many of whom need a fuller understanding of ICT-related career and education options to inform their subject choices at 14 and 16 years of age.

- Leadership and management of ICT were good or outstanding in over two thirds of the primary schools. In these schools leaders had a clear and comprehensive understanding of the contribution of ICT to the school's wider development and improvement. In outstanding secondary schools ICT was seen by the headteacher as an engine for innovation and raising standards. In contrast, half of the secondary schools surveyed in which leadership and management of ICT were no better than satisfactory had common weaknesses that included insufficient attention given to progress in ICT across the curriculum and lack of support for staff in teaching more challenging topics.
- In the majority of primary schools there were regular audits of staff's professional development needs. The approach was less systematic in secondary schools, where inspectors saw very few examples of any evaluation of the impact of training on the effectiveness of teaching or on pupils' learning.
- Commissioning and procuring the right equipment, infrastructure and software were becoming more challenging for the schools visited as their vision for ICT developed. Schools surveyed were engaging pupils, staff, governors and parents in helping to specify needs, but only a few had evaluated the effectiveness of previous investment or developed costed plans for rolling future investment.
- Most of the schools either had a virtual learning environment in full use or were in the process of installing one. Where schools were making regular use of a virtual learning environment, they had been able to enhance and enrich many aspects of school life, including the quality of learning resources, communications with parents, and assessment and tracking processes.
- All the schools visited ensured that pupils were well informed about the safe use of the internet and were able to use it in a responsible and safe way in school. However, the need for continued vigilance was emphasised by the fact that in discussions with inspectors, pupils frequently raised the issue of the under-age use of social networking sites. Staff training and support for parents need to remain a high priority for schools.

Recommendations

The Department for Education should:

- embed the report's findings in its review of the National Curriculum
- set out clearly the pivotal role of ICT in school improvement and in preparing young people for higher education and for skilled work.
- review equivalences in performance measures for schools between vocational coursework-assessed qualifications and more traditional GCSEs and GCEs.

Secondary schools and primary schools should:

- improve the use of assessment of pupils' progress in ICT, ensuring that pupils know how well they are doing and what they should do to move on to the next level
- ensure that pupils receive their complete entitlement to all areas of the ICT curriculum and that the ICT curriculum is engaging and relevant to pupils' needs within and beyond the classroom
- provide subject-specific support and professional development to improve teachers' confidence and expertise, enabling them to teach ICT more effectively
- evaluate the costs and benefits of establishing collaborative specialist services for ICT commissioning and procurement
- continue to make e-safety a priority in the curriculum, in staff training and in support for parents.

Secondary schools should:

- provide a range of ICT courses in Key Stage 4 that are suitably matched to students' needs and relevant to a life of continuing education, training or employment in a technological age
- build into Key Stage 4 programmes opportunities for students to engage with IT use in business
- ensure that girls are encouraged to continue studying ICT beyond the ages of 14 and 16
- ensure that all students are able to benefit from the use of appropriate ICT tools and applications across all subjects.

Part A: The quality of ICT in schools

1. Since the Education Reform Act of 1988, ICT has been compulsory for all pupils from 5 to 16 in maintained schools. At Key Stage 1, it is statutory to teach the use of ICT in English, mathematics and science. At other key stages there are statutory requirements to use ICT in all statutory subjects. At Key Stage 4 many schools teach ICT through discrete courses which are assessed by examination and/or coursework; in other schools ICT may be taught across the curriculum and not lead to external accreditation. The position of ICT in the National Curriculum and the proposed programme of study are currently under review.

Primary schools

Achievement

2. Over the three years of the survey, achievement was judged to be outstanding in 11 of the 88 primary schools visited, good in 39, satisfactory in 33 and inadequate in five.

3. In Key Stages 1 and 2 most of the pupils seen developed effective skills in the use of ICT to communicate knowledge and ideas. Some of this work was relatively sophisticated, as the following examples illustrate.

This small primary school in an urban area of high social deprivation, facing a particular challenge to improve pupils' literacy skills, used ICT to enrich learning. Within a cross-curricular topic about 'community', pupils in a mixed-age Year 4/5 class interviewed a paramedic who worked in their local community. They recorded the interview with a digital camera and took written notes on the answers to their questions. In the school's ICT suite, questions were then word-processed and small groups of pupils, acting the role of reporter and interviewee, digitally recorded their versions of the interview. They used software to edit their sound recordings which were then made into podcasts ready to upload to the 'news' section on the school website. This innovative approach gave them both an insight into their community and a real reason for writing, discussing and editing their work. As well as improving their literacy skills and helping them appreciate how material has to be refined and written for an audience, this successfully enabled them to develop new collaborative skills in ICT through making and editing their recording.

In an excellent lesson in Year 4, pupils were learning how to produce a podcast. They worked in pairs, with one pupil acting as a reporter and the other as 'an animal that was being interviewed'. Pupils had planned their questions and answers from the work about habitats in science. They learnt how to layer and modify sounds and how to add sound effects. The lesson helped pupils to develop their ICT skills, while consolidating their learning in science. The lesson also supported the development of pupils' writing, speaking and listening skills. All the work was undertaken with great enthusiasm.

4. Most of the Key Stage 1 pupils observed were able to learn programming through devising and testing sequences of instructions for floor robots. However, in Key Stage 2, pupils in the majority of schools visited had insufficient opportunities to develop their understanding and use of programming, and data logging and handling. In some schools this weakness arose from the limited skills and understanding of teachers. In others, headteachers cited lack of resources and equipment as the cause. In two schools, efforts had been made to provide additional opportunities through residential experience or as part of transition projects with secondary schools. However, it was recognised by many schools that such arrangements could not plug the gap effectively and additional equipment was being purchased, with plans to embed these aspects of ICT into the mainstream curriculum.
5. Nevertheless, good examples of programming and data logging in Key Stage 2 were noted by inspectors. In one school, building on work in Key Stage 1, Year 6 pupils used software to construct and test their own flow diagrams using standard syntax. They then wrote more sophisticated programs to control floor

robots including some instances where pupils were able to get a robot equipped with a marker pen to trace out their own names on the floor. In another school pupils used data-loggers in science to record changes in the weather. They then produced their own weather forecasts, including recordings of broadcasts, and created maps which depicted weather conditions and reports for cities across the UK. Another effective example of the use of data loggers is illustrated below.

The pupils, in pairs, were given data loggers for use in their science lesson. The teacher demonstrated their use, and one pupil then showed the class how they could annotate the graph they had produced. The pupils practised recording the varying light levels in various parts of the room with the data loggers. They then had to make a prediction about which material would make the best blackout blind. This linked to the work they had done in history about the Second World War. The pupils went on to use the data loggers to test a range of materials and decide what combinations of fabric would make the best curtains. Finally, in an effective plenary session the pupils considered the relative merits of the use of manual light sensors as opposed to data loggers.

6. The use of spreadsheets in many schools visited was limited by the teacher's lack of expertise. However, there were exceptions, as in one outstanding school where spreadsheets were being used in mathematics to model problems, enter data and construct simple formulae to add, subtract and divide. In another school, Year 6 pupils were using spreadsheets to test hypotheses and compare test results of differences in temperature and light around the school.
7. The better schools were integrating other features of ICT carefully into curriculum plans to ensure its contribution to enhancing the learning experience of pupils and to improving attainment. In these schools pupils were proficient in the use of digital still and video cameras to enhance their learning in a number of subjects. They demonstrated competence in text editing and layout and created engaging presentations with high-quality images. Commercial software packages for particular subjects were well integrated into cross-curricular themes. In one school, ICT was making a considerable contribution to raised standards in science in Key Stage 2 through the use of virtual experiments, with all Year 6 pupils expected to achieve Level 4 at the end of the year.
8. In some of the schools, ICT was used effectively to engage boys more successfully in English, especially in reading and writing. These pupils were motivated to improve their reading skills to enable them to understand and report on material researched on the internet. In one school, the opportunity to contribute online book reviews to a site provided by a commercial book supplier was encouraging reluctant readers. Several schools made laptops available to boys to successfully engage them in more active writing.
9. In many schools the use of ICT enabled pupils with special needs and/or disabilities to achieve as well as their peers in some aspects of the curriculum.

Occasionally they made more progress than their peers as a result of good support from teachers and teaching assistants. In one school, pupils with Down's syndrome and those on the autism spectrum responded very well to ICT opportunities and the school made effective use of specialised programmes to support specific difficulties. Some schools made effective use of the virtual learning environment to enable pupils with special educational needs and/or disabilities to make good progress in core subjects through extending their learning in school and at home. In one school, pupils with special educational needs and/or disabilities and some low achievers had used computer software to compose and record their own music in weekly individual sessions. The pupils then presented their compositions in assemblies. This had boosted the self-confidence and writing skills of the pupils. Similar use of ICT in music is illustrated in the example below.

A Key Stage 1 pupil on the autism spectrum had very poor concentration and usually required continuous support from the teaching assistant. However, in the ICT lesson he became quickly absorbed in the task of manipulating a music program to make simple beats and rhythms. He made the same progress as other pupils in opening and saving files and was delighted with his results in combining the sounds of clapping, drums, cymbals and triangle.

10. Where achievement in ICT was judged to be outstanding, there were examples of pupils with very low ICT skills at entry to the school achieving either at or above national expectations by the end of Year 6. These results were achieved in part through the use of thorough assessment at entry and excellent tracking at frequent intervals. In one good school, 'target walls' were used in Key Stage 1 and Key Stage 2 to assist pupils to know their targets and levels and sub-levels. Pupils in Key Stage 2 moved their name cards across for sub-levels achieved, and discussed ICT levels with their teachers.
11. Higher-attaining pupils in around a quarter of the schools visited were insufficiently challenged in their ICT classes and in their use of ICT across the curriculum. Too often teachers underestimated what pupils were capable of achieving. Sometimes work was not planned effectively to challenge more able pupils. Less skilled teachers struggled without specific guidance in schemes of work about challenging the more able. In these less effective schools, additional activities were introduced once pupils had completed their work, but this was unsatisfactory as more able pupils were capable of engaging in much more challenging work much sooner, and found the pace of learning too slow. However, examples of good practice with the more able pupils were observed in the good and outstanding schools visited, as illustrated in the example below.

In this school, with good ICT provision, gifted and talented pupils set up and ran a newspaper. They produced a questionnaire for initial market research, analysed the findings on a spreadsheet, raised the money, and developed costings and profit targets. They then produced the paper

using a publishing package and reviewed and made improvements to the second edition. The wider learning gains in project management, interpersonal skills, running meetings, and negotiation were all of value in addition to the ICT skills developed.

12. In 49 of the primary schools where ICT was judged to be good or outstanding it made an important contribution to pupils' personal development and well-being. Inspectors observed many examples of very good behaviour in ICT lessons across the whole sample of schools. The use of ICT in well-managed classes encouraged sharing and collaboration. Pupils were willing to help each other and equipment was used with care.
13. Pupils frequently reported how much they enjoyed using ICT in many different subjects and contexts, at school and at home. A pupil in one school said, 'I like using ICT because I can visit the whole world from my classroom in just one day.' Pupils were proud of their achievements in ICT and enjoyed describing their work. In nearly all the schools visited pupils were highly engaged and motivated by the use of ICT. In the 12 outstanding schools pupils developed the confidence to use a range of applications for independent work. They were encouraged to try out novel applications and techniques and given opportunities to share their results with others. Pupils from one outstanding school spoke at a headteachers' conference on their use of digital photography and spreadsheets in science. In the schools judged to be good or outstanding, pupils had a good understanding of their own level of performance and what they needed to do to improve.

Teaching and learning

14. Teaching and learning in ICT were judged to be outstanding in 10 of the 88 schools visited; they were good in 46 schools, satisfactory in 26 and inadequate in six.
15. The teaching typically took place in specifically designated ICT lessons and across the primary curriculum, as the primary schools visited generally taught ICT through a topic-based approach.
16. When the teaching was good or outstanding:
 - well-judged pace was sustained throughout the lesson, with effective strategies for maintaining all pupils' engagement at a high level, even through periods of time when data needed to be uploaded or equipment had to be changed
 - teachers had excellent subject knowledge and teaching assistants were well informed and briefed
 - consistent attention was paid to reinforcing pupils' understanding and their use of key words

- planning was thorough and detailed, with particular attention to meeting the different requirements of individual pupils
- clear and explicit learning objectives were proposed and then discussed with pupils and displayed throughout the lesson
- safe working was emphasised at all times and with all resources
- a range of equipment and resources was available wherever pupils were learning, including laptops, cameras, recorders and alternative operating systems
- excellent use was made of interactive whiteboards to recap and review in a fast-paced manner, and to introduce new learning in a highly motivating, stimulating format
- opportunities were available for pupils to experience 'real world' ICT use outside school
- teachers encouraged pupils to be independent and to make sensible choices about appropriate equipment and materials for their task
- questions were used skilfully to challenge and extend learning
- formative assessment, through a variety of means, was an integral part of each lesson and self- and peer-assessment were actively promoted
- explicit links were made with key learning points in other subjects and most especially in literacy and numeracy.

17. The example below illustrates a number of these strong features.

In a good Year 3 lesson pupils learned to sort and search and to develop data-handling skills. At the start of the lesson the class teacher put on a police officer's helmet and role-played a police officer, with the pupils playing a group of new police recruits. The pupils were asked to solve the mystery of the sweet shop robbery. After reading to the class the story of the robbery, she encouraged them to reflect on what analytical and ICT skills would help them solve the crime. Pupils input key statements from witnesses about the appearance of suspects. They worked in pairs using key words to refine their search. The lesson captivated the pupils' imagination and interest and enabled them to develop improved data handling by applying search and sort skills to identifying the criminal. They also learned the importance of systematic collection and storage of information for problem-solving.

18. In the good and outstanding schools, there were examples of ICT used creatively and imaginatively in many different subject areas by teachers and pupils to bring subjects alive. For example, in several of the outstanding schools, pupils in older year groups were being provided with laptops for their personal use, with plans under way to extend this provision to younger pupils over time. In another school spreadsheets were used in a history lesson to engage pupils in the study of the amount of food eaten by Henry VIII and its

calorific value. At yet another school, pupils had visited a dairy and explored the use of control technology. They had also made animations using industry-standard software at their local further education college. At another school, online connections were established with a local hotel, a theatre and Tate Modern which were then integrated into subject lessons. One school had established links with a school in Paris as part of the modern languages curriculum, which also included specialist language learning software.

19. When the teaching was satisfactory:

- the assessment or tracking of pupils' progress in ICT was not effective
- insufficient attention was paid to the different needs of the pupils in the class, leading to lack of progress for both slower learners and the more able, who were often 'treading water' while waiting to move on to the next part of the lesson
- the pace in lessons was slow, leading to too much time 'off task'
- there was too much 'teacher talk' reducing the time for pupils to engage properly in tasks
- teachers had poor subject knowledge, often accompanied by a lack of confidence in some elements of the curriculum such as data logging or control
- teaching assistants were used poorly, which discouraged the independent and creative use of ICT by some pupils.

20. Some of the weaknesses in less effective teaching are illustrated in the following example.

In this lesson Year 2 pupils were learning to use ICT in their art work. The pupils enjoyed what they were doing, but their progress was only just satisfactory. They learnt to use the tools to draw and fill irregular shapes using different colours, and to save their work. However, they were not provided with the prompts to help them to progress more quickly without being dependent on an adult. This was due in part to the fact that the teacher did not maintain a sufficient overview of how well all pupils were progressing and what they were learning. She offered only limited feedback and pupils were not encouraged to discuss what they were doing and to learn from one another. Pupils were unsure about the purpose of the lesson and had not considered the possible advantages and disadvantages of using ICT as an alternative to drawing by hand.

21. All of the primary schools visited had increased their investment in ICT to support learning. Mostly this was in equipment and facilities beyond the dedicated ICT suite, to improve access and flexibility for staff, pupils and parents. Many schools had purchased additional laptops, handheld devices and cameras to enhance learning and achievement across the curriculum. The 10 schools in which teaching was outstanding had made a significant investment in

a range of equipment and software such as notebooks, PCs with alternative operating systems, microphones, flipcams and programmable floor robots. The headteachers of these schools believed that the additional investment, together with the training of staff, had contributed to a rapid improvement in pupil achievement.

22. In two schools, teachers were trialling the use of tablet PCs to photograph work during lessons, in an enterprising initiative to assess and record progress. One school had purchased 30 handheld games consoles, specifically to improve speed and accuracy in mental arithmetic. The challenge generated by these arithmetic games excited the pupils and resulted in high levels of concentration. In another school a small group of pupils used the lunch break to create and send each other arithmetic puzzles through handheld consoles.
23. The use of good-quality resources and the motivation engendered are illustrated in this Year 6 class.

Two pupils who attended gifted and talented provision at their local secondary school were introduced to a freeware application (Scratch) which enabled them to design and program a two-dimensional computer game. Their enthusiasm on returning to their primary school prompted their teacher to download the software and to introduce a new unit of work based around it. Pupils were asked to design the graphics, layout and functionality of their own computer game and to subsequently write the program to implement their ideas. Over a series of lessons, pupils used a paint application to design their game backgrounds and moveable icons. Having completed the graphical elements of their game they wrote scripts to control the movement and interaction. This required them to utilise sophisticated programming constructs such as 'repeat until' and 'if then' in capturing keyboard input and managing variables. The choice of task and software motivated pupils who were enabled to make good progress. Most were able to write a series of executable instructions to implement the features of their game design. One autistic pupil excelled at this task and made better progress than his peers. He made outstanding use of loops, conditional jumps and incremental counters in his program. His skills exceeded those of his teacher, to whom he had to explain the principles of what he had done.

24. In schools where teaching and learning in ICT was judged to be satisfactory or inadequate, pupils often had to wait for the opportunity to use the ICT suite for work in other subjects. Those schools in which data logging was weak cited lack of finance for purchasing relevant equipment and resources as a cause.
25. Good subject knowledge was a key factor in good or outstanding teaching. In these schools arrangements were made for teachers to receive training from the ICT coordinator, the local authority or the virtual learning environment supplier. In several schools, staff from the local secondary school were training teachers in control technology and data handling. One school had established

links with two universities which had led to plans for three staff to undertake sabbaticals to research new approaches and resources in ICT. Where teaching was good overall, teaching assistants were well trained and received good personal support and coaching. In several schools, students on placement from local colleges, where they were studying NVQ courses, were providing useful additional expertise. Systematic self-evaluation of teachers' skills was evident in two schools; in one of them teachers used 'day books' in which to record the effectiveness of ICT activities.

26. In schools where teaching and learning were judged to be satisfactory or inadequate, less confident teachers took a rigid and prescribed approach to lessons in case they were unable to respond to the more advanced questions from pupils. This reflected gaps in their subject knowledge, especially in the areas of control and data logging.

Quality of the curriculum

27. The ICT curriculum was judged to be outstanding in 11 of the 88 primary schools visited; it was good in 34 schools, satisfactory in 38 and inadequate in five.
28. The good and outstanding schools visited had a comprehensive approach to curriculum planning, both for ICT in its own right and for ICT across the curriculum. They were implementing the full National Curriculum for ICT and using national schemes or local variants to ensure that a full balance was achieved across the different areas. Teachers had adapted national and local guidance to create their own cross-curricular themes within which the purpose of ICT had been carefully considered and detailed plans developed which resulted in exciting and creative activities tailored to the needs of individual pupils. Progression within year groups and continuity throughout the school were well catered for.
29. ICT was threaded through the whole curriculum of the most outstanding schools. Several of them used cross-curricular planning grids and maps to embed ICT opportunities in all aspects of curriculum planning. In the best curricula there were examples of ICT bringing new learning opportunities to other subjects. Online links with schools in countries such as Australia, China, France, Gambia and Germany enriched pupils' understanding of shared aspects of life and of the differences in ways of life across the world. The pupils were motivated by these contacts to develop their use of blogging, email, Skype and video conferencing.
30. There were several examples of primary schools with good ICT provision drawing effectively on external expertise. One school moderated its assessment of its ICT work with the local secondary school so that staff gained a shared understanding of what National Curriculum levels meant. The liaison also encouraged an open-ended approach to the ICT curriculum in Year 6, including the use of major ICT topics, which allowed the pupils to achieve at Level 6. The

example below illustrates some of the features of an outstanding ICT curriculum and demonstrates how external support can enhance both specialist ICT provision and the use of technology across the curriculum.

This average-sized urban primary school had a high proportion of pupils from disadvantaged backgrounds. The curriculum was exceptionally well planned and provided suitable opportunities for all pupils regardless of their ability. For example, gifted and talented pupils had the opportunity to attend ICT workshops at a local secondary school. Pupils with special educational needs and/or disabilities had their own laptops and were encouraged to work independently. Pupils at Key Stage 2 had three lessons a week in the ICT suite. One of these was a skills-based lesson, the other two were linked to cross-curricular themes. In Key Stage 1 all pupils had two ICT sessions a week. In Key Stage 2 pupils were expected to select the most appropriate application for the work they were doing. All pupils received their entitlement to the statutory ICT National Curriculum. The programme of study was fully covered with well-planned progression of skills and very good cross-curricular links. In particular, good use was made of outside agencies to support the ICT curriculum. For example a 'digital artist' used handheld global positioning systems with pupils in the local park. They tracked their movements, downloaded back at school and turned a map of the area into an 'artscape'.

31. In the 43 schools where the curriculum was no better than satisfactory, planning was limited and often did not take into account cross-curricular opportunities. Schools generally gave too much emphasis to the use of ICT for communication and presentation, and not enough to data logging, data handling, data modelling and control. Teachers in these schools lacked the knowledge to teach these aspects effectively and equipment was often inadequate or outdated. Where the curriculum was inadequate, schools were not delivering the full National Curriculum and were failing especially to deliver the requirements in the more demanding areas of data handling and logging. In one school pupils reported that they learned more about ICT at home than at school.

Leadership and management

32. Leadership and management of ICT were judged to be outstanding in 17 of the 88 schools visited; they were good in 44 schools, satisfactory in 22 and inadequate in five.
33. In three quarters of the schools visited there was a clear vision for the role of technology in supporting the learning experience and improving the outcomes of all pupils. In the outstanding schools headteachers had worked with parents, pupils, staff and governors to create their vision. This, together with effective self-evaluation, formed the starting point for developing costed plans and review arrangements which had enabled these schools to make effective

progress in the investment and use of ICT, and in improved pupil outcomes. The example below illustrates the impact of effective leadership of this kind.

The recently appointed headteacher had a clear vision for the development of staff in two federated schools, and for the role of ICT and its use across the school. He had changed the management structure of subjects from individual managers to teams which included teachers, teaching assistants, office staff and the site manager. Governors had supported proposals to invest £150,000 in a range of hardware and software. These changes had enabled rapid progress to be made in pupils' use of ICT to improve their learning. The whole school community including parents was excited by these developments and pupils spoke articulately about the impact of ICT on their learning.

34. The effectiveness of the ICT coordinator or subject leader was critical to the success of the good and outstanding schools. These key staff led by example and usually undertook the observation, training and coaching of teachers and teaching assistants. Coordinators often shared classes with other teachers as part of coaching and confidence-building. This enabled less confident staff to try out new approaches which were then incorporated into their classroom repertoire. Several of the coordinators observed had backgrounds in the ICT sector or in secondary schools. A few were undertaking Master's level studies in ICT in education to enable them to support their colleagues to appreciate more deeply the pedagogical aspects of the use of ICT. In the best examples of school and local area collaboration, imaginative approaches to subject leadership enabled expertise to be deployed to maximum effect, as in the example below.

Following the loss of local authority ICT adviser posts a rural school had become a hub for ICT initiatives for a cluster of schools because of the proactive drive of the ICT coordinator. Regular meetings were arranged for cluster teachers and a self-help support group was working well. This had enabled these schools to keep up to date with national developments in ICT and to support the development and training needs of staff.

35. Some of the most effective schools visited ensured that all new staff were trained in the use of ICT to support learning as part of their induction to the school. A few schools undertook annual audits of the ICT training needs of both teaching staff and teaching assistants and then planned a training programme to meet them. In contrast, in schools where ICT was no better than satisfactory, there was no systematic approach to auditing and improving staff skills, and there was frequently no programme of lesson observations by managers.
36. In schools where leadership was good, governors played a key role, often drawing on their individual ICT expertise in, for example, industry or in higher education. In the outstanding schools, governors were actively involved in self-evaluation and development plans. In some schools the chair of the governing

body had taken a particular interest through regularly visiting lessons and sometimes assisting in the teaching of ICT. Governing bodies in these schools had worked hard to ensure adequate budgetary provision for investment in ICT and for its regular updating and renewal.

37. Headteachers in the good and outstanding schools visited gave visible encouragement to their staff to incorporate ICT effectively into their teaching, often modelling good practice through their own teaching and through their use of ICT in large-scale events and communications with parents. Many headteachers and senior staff spoken to in these schools could point to developments in the use of ICT that were leading to major improvements in pupils' achievements, notably in English and mathematics. Some headteachers had secured additional funds from business and from charities to enable their schools to invest in additional ICT equipment and resources.
38. Many schools were actively considering ways of improving the skills of parents in the use of ICT, to enable them to support their children more effectively. In several schools, classes had been established which were well received by parents who said that these enabled them to enjoy working with their children on homework and extension topics. Acquiring these skills also led parents to become more engaged in communicating with the school and collaborating in their child's progress and development. Some schools had established early bird and lunchtime clubs for parents and their children. More able pupils particularly appreciated these opportunities to develop their confidence in a wide range of applications. In one school a pupil with learning difficulties was helped to make extensive progress in core subjects through the use of the virtual learning environment in school and at home. The families of 10 pupils in another school had taken advantage of the grants available from the former government's Home Access scheme to buy laptops and printers for use at home.⁴
39. Effective liaison with other schools or organisations was a key feature of some of the most effective ICT provision observed in primary schools. Links with secondary schools and city learning centres enabled these schools to access better resources and equipment in, for example, control and monitoring applications. In some cases, pupils in Years 5 and 6 benefited from regular sessions at secondary schools. In another school, pupils identified as gifted and talented attended a fortnightly mathematics session at the local secondary school; in one session they wrote a program to count the total number of squares on a chess board and then used it to generalise to any size of board. ICT was sometimes well integrated into transition projects, which aided continuity in learning as pupils moved from primary to secondary schools. Other examples of liaison which were important for individuals included a school

⁴ The Home Access scheme was a £194 million government-funded programme which ran from January 2009 to December 2010. It provided 258,253 low-income households with grants for computers and internet access for children's learning at home, covering pupils in Years 3 to 9, and looked after children and pupils with special educational needs and/or disabilities in Years 1 to 13.

which was supporting a pupil in hospital by providing a laptop and homework in collaboration with the hospital teaching service.

40. Typically, changes in the headteacher or key staff had led to disruption and delay in delivering ICT plans in the satisfactory and inadequate schools visited. Although newly appointed heads or ICT coordinators reinvigorated the school's vision for ICT, there was then a delay in securing benefits for pupils. In a small number of schools, ICT action plans were not sufficiently focused on achieving benefits for pupils.
41. In schools judged no better than satisfactory, the ICT coordinator did not always record or follow up lesson observation judgements. These schools did not provide sufficient guidance for class teachers in, for example, planning for differentiation. In three of the schools visited, the lead role was shared between staff or undertaken by a part-time member of staff, which limited its effectiveness.

Secondary schools

Achievement

42. Achievement was judged to be outstanding in six and good in 21 of the 74 secondary schools visited. It was satisfactory in 33 of the schools and inadequate in 14. That achievement was good or outstanding in only 27 schools was a cause of concern.
43. The number of students in England entered for the GCSE in ICT has dropped dramatically since 2007. In 2011, 31,800 students attempted the examination compared with 81,100 in 2007, a reduction of 61%. Over the same period, pass rates at grades A to C rose from 64% in 2007 to 78% in 2011.⁵ There has been a considerable increase in the number of students completing vocational awards in ICT over the same period. In 2011, 212,900 students completed OCR Nationals, a suite of popular vocational qualifications, compared with 58,900 in 2008.
44. There has also been a reduction in the number of entries for A-level ICT in this period. In 2011, 8,830 students entered for A level compared with 10,885 students in 2007, a reduction of 23%.⁶
45. Girls have continued to outperform boys by nine percentage points at GCSE level, four percentage points at AS level and six percentage points at A level in 2011. However the number of girls entered continued to lag behind boys and

⁵ Statistical First Release: GCSE and Equivalent Results in England, 2010/11 (Provisional), Department for Education, 2011; www.education.gov.uk/rsgateway/DB/SFR/s001034.

⁶ Statistical First Release: GCE/Applied GCE A/AS and Equivalent Examination Results in England, 2010/11 (Provisional), Department for Education, 2011; www.education.gov.uk/rsgateway/DB/SFR/s001035.

the percentage of girls entering for AS and A level has remained static at around 35% of the cohort. This is disappointing given the efforts made through national initiatives such as Computer Clubs for Girls which have sought to increase the number of girls opting for ICT and computing subjects, and eventual careers in the ICT sector.

46. At the end of Key Stage 3, students in the schools visited generally demonstrated satisfactory skills in using ICT to present information and to communicate their ideas. They were confident users of Office software and, in some cases, of graphics applications. Many students, including those with special educational needs and/or disabilities, also demonstrated appropriate skills in manipulating a variety of digital media. However, in many schools where achievement was satisfactory or inadequate, standards in the use of spreadsheets, databases, data logging, control and programming were low. This was because there were too few opportunities for students to develop the relevant skills, knowledge and understanding. In some schools, assessment of students' attainment at the end of Key Stage 3 was inaccurate and frequently over-generous.
47. In virtually all of the schools visited where achievement was judged to be inadequate, as many as a half of the students were not receiving ICT lessons in Key Stage 4. There was often very little or no tracking of students' progress in ICT in other subjects or outside formal ICT lessons. Typically, slow progress in Key Stage 3 and a lack of ICT teaching in Key Stage 4 resulted in below-average attainment at age 16 in these inadequate schools. Subsequent retention and achievement in the sixth form was also poor. In schools where achievement was no better than satisfactory, inspectors also observed a lack of differentiation, together with insufficient opportunities for students to use ICT creatively or independently in lessons. Students sometimes made better progress outside ICT lessons. The low attainment in the more challenging topics at the end of Key Stage 3 continued to be evident in Key Stage 4.
48. Achievement in the sixth forms seen was highly variable, with students in a small number of schools achieving outstanding results in AS and A level but many other students underachieving against their targets and the A-level grades required for entry to university courses in IT and in computing. The steep gradient from the requirements of particular vocational qualifications in Key Stage 4 to the demands of advanced study was often cited by staff and students as a contributory factor to disappointing achievement.
49. Where achievement was weaker, higher attaining students were frequently held back because:
 - too much whole-class teaching was targeted at the average student's pace and capacity
 - there was insufficient challenge and pace for those students quick to learn and ready to move on

- students' individual targets were set too low
 - vocational qualifications were not extending more able students sufficiently
 - opportunities for independent study were lacking.
50. In the 27 schools where achievement was good or outstanding, steps were taken to enable the higher-attaining students to make good progress. In one school a quarter of the students in Year 11 were entered for AS level, as the school viewed the vocational award being used with other students as insufficiently challenging for these students. In an outstanding school, differentiated learning resources were provided online for lessons, with encouragement for all students to achieve at the highest possible levels. Another outstanding school encouraged able students to complete an optional module on control to extend their achievements in their other qualifications.
51. In these schools students enjoyed their ICT lessons. Standards of behaviour were at least good, with examples of students developing effective collaboration skills with their peers and with teachers. They also acquired the discipline of independent working and were able to organise their work to meet deadlines. In one school, more vulnerable students with patterns of poor attendance and behaviour problems reported that they had a greater sense of pride in their work when they were able to present it more professionally. The example below illustrates how one school used ICT to raise achievement among students from the Traveller community.

Students were provided with laptops through the Traveller information service so they were able to stay in touch with the school and their learning. The school's technicians ensured that the laptops could connect to the internet remotely so that the students could access work at home that they might have missed in school. While travelling, students were able to email work into school. Parents were also involved in the issue of the laptops to ensure a satisfactory level of e-safety. An external evaluation of the project reported increased motivation from the students, who had been able to keep up with their work and therefore make better progress than would otherwise have been the case.

52. In contrast, in some satisfactory and inadequate schools, students reported that they did not enjoy being spoon-fed small pieces of learning. For example, one student said, 'I could have gone off and done this by myself given the chance.' In these schools there were few opportunities for students to work independently. In some of the schools, the reliance on one Office suite or operating system deprived students of the opportunity to learn how to exercise choice in the applications best suited to the task in hand.
53. In schools that were at least satisfactory there were many examples of students with special educational needs and/or disabilities achieving well despite their limited attainment on entry to the school. In one school, students word-processed scripts of their own versions of the Romeo and Juliet story which

they then performed. This demonstrated their ability to produce well-written material, make digital still photographs to sequence their storyboard and then produce a scene. Learning support and teaching assistants made important contributions to these students' good progress, and special software and equipment were sometimes used effectively to speed progress.

54. In one outstanding school there was excellent joint planning between the ICT and learning support departments; the availability of learning resources through the virtual learning environment enabled the teaching assistants to plan more effectively in advance to meet the specific needs of individual students. In a school where ICT was judged to be good, staff reported that students 'experience a sort of liberation through access to ICT which allows them to express themselves musically, artistically and in writing in ways that otherwise they would not be able to do'. This school was also supporting excluded students by providing them with laptops and assignments which were then assessed by staff via email, as a means of ensuring that they continued to make some progress.

Teaching and learning

55. Teaching and learning were judged to be outstanding in three schools, good in 32, satisfactory in 32 and inadequate in seven. The teaching of ICT was therefore no better than satisfactory in just over half of the schools visited.
56. When the teaching was good or outstanding:
- lessons were well planned with a good variety of activity and resources
 - assessment for learning was embedded throughout the lesson with feedback, frequent marking and praise linked into planning the next lesson
 - lessons were brisk with smooth transitions so that no time was lost for learning
 - teachers encouraged well-structured peer and self-assessment
 - students were clear about their own current level and what they needed to do to improve
 - learning activities were expertly differentiated to meet individual students' needs
 - questioning was used to deepen understanding, rather than just to check knowledge
 - key terminology was introduced and reinforced
 - relevant and practical contexts were used to bring tasks to life.
57. A number of these features were illustrated in a particularly creative Year 7 class.

Students were taught how to programme and control movements. The software allowed the students to create a character with physical features of their choice and to choreograph a dance routine. The students were quick to learn control commands and they learnt how to programme and control the direction and speed of travel of the character. They were also able to practise the dance movements themselves in the school hall and make further amendments to the dance routine. Good links were then made with the health and well-being curriculum.

58. This example demonstrates imaginative provision by teachers, going out of their way to support individual students working in difficult circumstances.

One Year 11 girl whose family had moved away from the area was able to continue with the ICT vocational course at the school from a distance. From home she used an instant messaging application to connect to her teacher's laptop during ICT lessons. He was able to explain the lesson to her via texting, and the dialogue between them was projected on the interactive whiteboard for the class to see, so that she could retain some social contact with her classmates. In this way the girl was able to complete the coursework assignments, email them to her teacher to be assessed and successfully complete the course.

59. There were also a few particularly creative approaches to allowing students to develop their skills and experience outside formal lessons. One school had established a development area in its ICT department for students to try out different operating systems and software. This was developing their confidence in transferring their skills and tackling new challenges.

60. In most of the schools in which teaching was judged to be at least satisfactory, ICT lessons were taught by specialists with good subject knowledge. Many teachers in these schools also demonstrated detailed knowledge of the criteria of vocational qualifications and the requirements for GCSE. In the lessons observed that were good or outstanding, teachers used their technical knowledge to devise highly effective sessions. In one school, a teacher was able to explain clearly the concepts behind a demanding task on databases. This teacher used role play to help students understand the difference between simple and complex queries. The explanation enabled the students to understand how to use logical operators to further refine enquiries. In another school where ICT was good, students in Year 11 were supported by the teacher to produce spreadsheet work of a very high standard. The students were able to use a range of functions and formulae to test business models and to predict which would give the best return on investment.

61. Lessons where teaching was satisfactory exhibited some or all of the following features:

- planning gave insufficient attention to the different needs of the students in the class

- lessons lacked pace, which could encourage 'off task' chatter and low-level disruption
- there was too much unproductive teacher talk
- students were unclear about the purpose of the lesson and what they needed to do to improve
- there was little feedback to students or marking of their work
- teachers used closed questioning which focused on completing tasks rather than extending understanding
- teachers spoon-fed small components of the activity to the whole class
- teachers had limited capability in some curriculum areas such as databases and programming.

62. A number of the weaknesses in less effective teaching are illustrated in the example below.

Year 7 students were being taught to use software to write instructions to control an animated figure on the screen. The introduction to the lesson was too lengthy and did not include sufficient strategies to engage all students. This resulted in persistent low-level disruption from the start and too few students subsequently following the teacher's instructions. However, the students were already quite able and the teacher had underestimated their capability. Many students worked out very quickly for themselves how to get the image of the cat on the screen to move and how to change the colour of the cat, but were then not challenged to move beyond this. The teacher did not assess how well students were progressing during the course of the lesson and, as a result, his expectations of what they could achieve remained too low. The lesson was not sufficiently well structured; it was too teacher-directed and did not take sufficient account of students' prior aptitudes or needs.

63. In some cases, organisation of accommodation and resources for ICT constrained the teaching and learning. For example, design of ICT classrooms limited the opportunities for group work or activities away from fixed computers. Some of the poor behaviour observed was exacerbated by the arrangement of computers in fixed rows.
64. In many schools ICT was used more effectively in other subjects to improve learning than was the case in specialist ICT lessons. In these cases there was more emphasis in other subject lessons on promoting deeper learning through the use of ICT. This reflected the greater pedagogical skills and understanding of many of the teachers of other subjects observed in the survey and an excessive focus in Key Stage 4 ICT lessons on the particular requirements of the examination accreditation. For example, in a mathematics lesson a simulation of a car crash was used effectively to develop students' understanding of the complex interaction of variables, which they were able to

learn to plot and analyse on the computer. In another school a donated seismograph had enabled students studying A-level geography to capture and analyse data from a recent earthquake in Lincoln using a data logger. Students in a third school used the opportunities of World Maths Day to compete online with students from other countries resulting in improved motivation in previously underperforming students and gains in their understanding of other cultures.

65. In some of the good and outstanding schools for teaching and learning ICT, resources were used widely across all subjects with effective usage seen in modern languages, mathematics, science, history, art, fashion and PE. The example below illustrates some of the best practice observed.

The school had invested in industry-standard graphic design equipment. A-level art and design students were able to take digital photos using professional quality digital SLR cameras and import them into commercial software to manipulate the image on high-specification computers. The image was then exported to 'Illustrator' in order to convert it into a vector graphic, break it into layers and add additional elements. Finally it was printed on a commercial-grade colour printer, resulting in photo-quality gloss prints incorporating watermarks and a 3D holographic illusion. This quality of work was having a clear impact on the standards and attainment of students studying the subject at the school.

Quality of the curriculum

66. The ICT curriculum was judged to be outstanding in five schools, good in 21 and satisfactory in 27 schools. It was inadequate in 21 schools, representing over a quarter of those visited. Weakness in the curriculum was the main factor contributing to poor achievement in schools. Those schools whose curriculum was judged to be outstanding offered a wide range of courses, with sufficient progression routes from Key Stage 4 to post-16 to meet the needs of different learners.
67. In Key Stage 3 nearly all of the schools provided discrete ICT lessons for all students in specialist ICT facilities. In a very small number of schools the more vulnerable or lower-attaining students were taught in primary-school-style classes with a key class teacher for part or all of the three years. In these cases ICT was taught through topic based sessions by the class teacher. Most of the schools visited were following the National Curriculum guidance, although there was an imbalance in the coverage of certain elements, as described in the achievement section of this report.
68. In Key Stage 4 the schools offered either GCSE ICT or vocational ICT qualification routes, or both. Although there was widespread use of vocational qualifications in many of the schools, often the modules chosen by the school narrowed the learning and limited the achievement of the students. The availability of vocational courses had a positive impact on the motivation and

achievement of students for whom academic programmes were less suitable. However, some schools had used these courses too extensively, entering students for vocational rather than academic qualifications and, as a result, limiting challenge to more able students and restricting students' opportunities to study ICT post-16. The schools with sixth forms offered AS and A level in ICT; a smaller number of the schools offered the equivalent qualifications in computing.

69. An inadequate curriculum was almost always a consequence of failure to provide the full National Curriculum programme of study for enough students in Key Stage 4 who had not selected an examination course in ICT. Often there was also inadequate coverage in Key Stage 3. In many of these schools, students who did not choose to study an examination course in ICT received no ICT teaching in Key Stage 4. In some instances they had opportunities to develop their ICT through other subjects, but there was no planning, coordination or feedback to them for this learning. As a result, between 40 and 50 per cent of the students at these schools were reaching the end of Key Stage 4 without the platform of knowledge, understanding and skill necessary to progress to advanced-level study or vocational training in ICT.
70. Insufficiently comprehensive curriculum planning and monitoring were often features of the 27 schools where the curriculum was judged satisfactory. In these schools students were receiving their National Curriculum entitlement, but there was an imbalance of the time and resources allocated to the different elements, which limited students' achievement. Students were generally giving much more time and attention to the communications and presentation aspects of the curriculum. Typically in these schools, this imbalance was exacerbated by the requirements of vocational qualifications in which other components such as programming and control were neglected or absent. However, other good and outstanding schools demonstrated that it was possible to make arrangements to fill gaps in the coverage of the vocational award, for example by using elements of the design and technology course.
71. This curriculum imbalance created challenges for students wishing to progress to advanced courses in the sixth form or at college. At one school the local college made arrangements for students wishing to progress to a level 3 specialist ICT or computing course to undertake a preparatory course to acquire the necessary foundations of knowledge and understanding missing from their Key Stage 4 experience.
72. In a very small number of the good and outstanding schools visited, there was a robust and comprehensive approach to planning the ICT curriculum in both specialist lessons and across the whole curriculum. One school used a curriculum matrix to identify links between the ICT taught curriculum and opportunities to extend ICT understanding and skills in other subjects. In another an 'ICT map' was updated annually and appeared as a regular agenda item at departmental staff meetings. This allowed the school to make additional provision where gaps had appeared in curriculum coverage, such as by

arranging a project day on control technology. One school made sure that through a carefully planned approach in Key Stage 3, students were supported to catch up in their understanding of data handling and programming, where this had been missing in Key Stage 2. Despite these examples, novel approaches to developing the curriculum were rarely seen during the survey.

73. Although only five schools were visited which had an outstanding curriculum for ICT, they illustrated what is possible, as in the following examples. The first deals with specific ICT provision across the school; the second demonstrates the effective use of ICT to enhance the wider school curriculum.

The impact of the specialist status in mathematics and computing in this 11 to 18 secondary school was seen in its outstanding curriculum provision. This had been carefully thought out and planned to ensure that the full range of students' needs was met.

At Key Stage 3, specialist 'transition groups' supported vulnerable students transferring from primary schools. A core curriculum, including elements of ICT, was taught by specialist transition class teachers. Some students were supported in this way as far as Year 9 if their needs required it.

At Key Stage 4 there were three broad pathways appropriate for higher-, middle- and lower-attaining students. Lower-attaining students followed a locally devised Level 1 course with a strong focus on ICT and media. Middle-attaining students could choose from a vocational qualification with either two- or four-GCSE equivalence. Higher-attaining students were encouraged to complete the four-GCSE-equivalent vocational course in just one year and then take an AS in ICT during Year 11.

There were clear progression routes from Key Stage 4 into the sixth form which resulted in unusually large numbers of students choosing to stay on in the school and study AS- and A-level ICT. More than half of all sixth formers chose to study ICT, and around half of these were girls. Out of a sixth form of around 150, 21 girls were studying A2 ICT and 51 were studying AS ICT. This was in contrast to the trend seen nationally. Students said it was because they had had a very good experience of ICT at the school beforehand; because they had confidence in their teachers to explain things well and to support them effectively; and because the pathways from Key Stage 4 ICT to ICT A level were clear. AS ICT was by far the most popular Level 3 course offered by the school.

In an 11 to 16 special school for students with moderate to complex learning difficulties, a fitness programme had been developed that involved all students. The fitness suite, developed as part of the school's sports college status, had a data logging system linked to the fitness equipment, and each student had his or her own entry code. Each student, with support from the sports staff, had a bespoke programme that they could access. Time on the fitness machines in schools was

automatically logged but the system also enabled students to record fitness work out of school by adding to the log themselves. Students could be sent messages at home regarding their current performance levels. Data was used to celebrate achievement in terms of fitness. Students had gained from this in a number of ways. It had improved their involvement in active sport and built their confidence so that some had joined a gym out of school. It also supported their social skills for adult life. They had developed their knowledge and understanding of data logging and control by participating in a real-life integrated environment.

74. Twenty-three of the schools visited were making plans for or starting to provide the new ICT diploma at foundation, higher or advanced level. Nearly all were planning to deliver the course through collaboration with other local schools and colleges, enabling students to attend part or all of the course at a partner institution or with specialist teachers who would travel to partner schools to teach part of the programme. A small number of schools had failed to pass the gateway selection process at their first attempt because of the lack of business involvement in their course proposal. Many of the managers and teaching staff involved had attended a number of briefing sessions, although there were complaints from some schools that specifications and guidance were late arriving from the awarding bodies.
75. Most schools were undecided whether the new diploma would replace other vocational awards or GCSEs at Key Stage 4. Some schools viewed the extra challenge of the diploma curriculum as a positive benefit for their students and especially for the more able. The diploma students spoken to by inspectors were positive about the course content and teaching style. They praised the creative approach, and the opportunities for worthwhile work placements and course input from local employers. Some schools had invested in additional IT equipment and resources which were benefiting students across the school. Where a local partnership was well established, students appreciated the opportunity to study at a partner institution. However, students at some of the schools were experiencing timetable and transport difficulties.

Leadership and management

76. The leadership and management of work in ICT were judged to be outstanding in nine schools. They were good in 28 schools, satisfactory in 28 and inadequate in nine.
77. The common characteristics of the outstanding schools were:
- an ambitious strategic place for ICT as the engine for innovation and raising standards
 - a collaborative approach to the development and implementation of ICT plans embracing the whole-school community
 - clear and effective delegation, with all staff making a contribution

- commitment to continuing training and coaching
- self-critical monitoring
- planned investment in infrastructure and resources.

78. All 28 schools visited in which leadership and management were judged good or outstanding had established a clear vision for the contribution of ICT to the school's overall objectives and to improving the outcomes of its students. In the outstanding schools, an exciting and ambitious vision had been developed jointly by staff, governors, parents and students. In these schools, ICT was seen as a vital subject and school-wide tool for preparing students for further learning and for work in a technology-rich, interconnected world. It was recognised that no students should be disadvantaged in the future by their lack of ICT capability or understanding.
79. The vision in these outstanding schools was underpinned by comprehensive plans and robust, honest self-evaluation. National benchmarking schemes such as the Becta Self-review Framework and the ICT Mark were used systematically to diagnose current effectiveness. All levels of management understood the strengths and weaknesses in the ICT department and the actions needed to make further improvement. Plans focused on challenging targets with measurable timelines and clear success criteria. These schools used student tracking data effectively to monitor the progress of improvement plans. In a few of the schools students were consulted on their ideas for further improvement. The impact of highly effective leadership and management is demonstrated in the examples below.

Four years ago standards were below average. Limited ICT resources and an unreliable network resulted in a great deal of frustration among staff and students and patchy use of ICT by other subjects. The new headteacher at the time saw developing the use of ICT across the school as one of the main planks in his strategy for bringing about improvement. A successful bid for specialist status in mathematics and computing provided much of the funding to allow the school to make a significant investment in ICT resources. The first priority was to design and install a fast and reliable network with sufficient capacity to meet the school's likely needs currently and in the future. More computers, laptops, handheld devices and digital cameras were added as funding allowed. Close attention was paid to training staff to use the new technologies. Staff were shown examples of the kind of digital media that students were capable of producing and then learnt to make their own films on the themes of 'gurning for beginners', body popping and dancing. The emphasis of staff training was on how ICT can be used to improve students' learning. Teachers were encouraged to take risks and to explore innovative ways of making learning better. High expectations of students and rigorous target-setting were other important elements driving the school's rapid improvement.

As a result, all subjects now make widespread use of ICT to improve learning. Students have more opportunities to work independently and are more engaged and working harder. Students said that being able to use ICT in all their subjects had made learning more active and interesting for them.

Results have improved significantly in all subjects, and this is attributed largely to the widespread and innovative use of ICT. The school was targeting 100% of students gaining grades A* to C in ICT in summer 2009. Standards are exceptionally high and this mixed-ability comprehensive school compares well with many selective schools.

In another school, ICT was extremely well led at all levels. Monitoring of the work of the department was regular, accurate and led to carefully targeted improvements. Self-evaluation was accurate and comprehensive. It identified the key changes needed to sustain high performance. The improvement plans for ICT were excellent, taking into account a range of sources of evidence, including student perceptions, and clearly focusing on the impact on students' achievement.

Investments in ICT infrastructure, including new virtual learning environment software and personnel, had been substantial; there was a suitable strategic plan in place for further equipping the school and there was a sustainable equipment renewal programme. Equipping all teachers with laptop computers and classrooms with either projectors or interactive whiteboards had an impact on the use of ICT across the school. An experienced ICT teacher trainer was appointed to lead continuing professional development across the school.

The vision was appropriate and well understood by all staff. It was based on the concept of the student and teacher as researchers, and was developing well in a very short time.

80. Effective departmental and subject leadership were critical factors in the success of the schools judged good or outstanding for leadership and management. The active involvement of members of the senior leadership team in the teaching and management of the department was also key. In a small number of these schools there had been recent changes in the management of the ICT department which had led to progress in improving the quality of teaching and learning and in student achievement. Several of the satisfactory schools had recently appointed heads of department who were also bringing positive change to the effectiveness of planning and evaluation, and to improving student outcomes.
81. In the schools where leadership and management were less effective, common characteristics were as follows.

- There was a lack of awareness of, or urgency in dealing with, current weaknesses.
 - The school had no shared plan for the contribution of ICT to raising standards.
 - Only occasional staff training was available, with limited goals.
 - Few review processes were used to highlight areas for attention, with a tendency to be overgenerous in self-assessment.
 - School development planning focused on tasks, rather than on improving outcomes.
 - There was little or no planning for future investment or renewal.
82. Schools in which leadership and management were judged inadequate had weak systems for monitoring the quality of provision and poor or no evaluations of the impact of investment in ICT on the overall quality of teaching and learning. This sometimes led to poor planning and insufficient priority being given to updating systems and equipment. For example, because one school had anticipated provision by the local authority of a new building five years previously, there had been no further capital spend, which had led to problems with the ICT infrastructure, the speed of connectivity and the implementation of the virtual learning environment. A recent audit in another school, which had invested significantly in hardware, software and online learning resources, had revealed the very high costs of replacing equipment which had not been included in future budget plans. One inadequate school had ignored advice from the local authority and the action plan imposed by the senior management team on the ICT department had not been taken forward.

ICT across the curriculum

83. In the second and third years of the survey, inspectors specifically focused on the effectiveness of the use of ICT across the curriculum in 36 of the secondary schools visited. In three of these schools it was judged outstanding, in 11 good, in 20 satisfactory and in two inadequate. Typically these schools had invested in a wide range of ICT equipment and resources for subject use beyond the ICT department. However, the variability in the effectiveness of ICT use across the wider curriculum in the schools surveyed meant that not all students were gaining the benefits of ICT as a tool for improvement and enrichment. The reasons for the differences in the effectiveness of ICT use are explored further in this section.
84. In the 14 schools judged to be good or outstanding there was an ethos and climate which encouraged senior staff and teachers to collaborate and learn together from many different starting points in terms of prior knowledge and skill levels in the use of ICT to improve learning. These schools had a core expectation that ICT, when used appropriately and effectively, was central to improving student success in all subjects. ICT was embedded in all schemes of

work and was seen as part of the everyday classroom and laboratory experience across the school. Teachers were always looking out for new ways of incorporating ICT to stimulate students or to extend their learning. Confident and enthusiastic teachers were also able to learn from students. These teachers understood that ICT was not the complete solution to meeting their students' needs, but rather a tool to be applied selectively.

85. The characteristics of good teaching and learning were as described for specialist ICT lessons in paragraphs 16 and 56. However there were some additional features of good practice in its use in other subjects. The teacher's skill in selecting appropriate ICT use was key to student progress. Good teachers made discriminating and well-planned use of ICT to support directly the aims and objectives of the lesson. They designed a wide range of activities which provided plenty of opportunities for independent and small-group work and peer review. There was a balance between the use of ICT and other forms of learning and students were encouraged to learn to choose the best ICT tools and applications and to discriminate between different sources of online information.
86. In a geography class students used ICT to analyse extensive data on rivers. In a business studies class in the same school, Year 11 students used skills acquired in ICT GCSE in Years 9 and 10 to develop macros when using spreadsheets to show profit and loss, balance sheets and forward cash-flow projections. In another school, PE staff on a junior sports leaders' course used video clips of their students coaching primary school pupils to demonstrate the significance of the body language of the coach for the motivation and engagement of the pupils. This session led to a rapid improvement because of the immediacy and relevance of the feedback. In another session, internet-based film clips and a global mapping site were brought together at speed to evoke the location of the ranch in *Of Mice and Men*, bringing immediacy and spontaneity to the lesson.
87. The examples below provide more details of some of the particularly good practice observed.

An 11 to 16 secondary school provided two differing examples of how the use of ICT to support learning raised achievement. In the first example, two girls had produced a 17-minute film in French. They used the game *Sims* to modify 3D objects to create avatars of themselves in school uniform, avatars of their teachers and representations of their classroom and other areas of the school. The girls scripted a storyline, writing the dialogue in French, and the avatars were animated to perform the necessary actions. Finally they saved and compiled the animated scenes into a film and recorded the voiceovers in French to create the finished product. The use of ICT improved the girls' learning of French because the task really engaged them and they ended up spending longer on writing and speaking in the target language than would otherwise have been the case. In the process, they also developed their skills in 3D design.

In the second example, during a chemistry lesson the teacher's imaginative use of an animated photograph of a famous scientist 'talking' about his life's work was inspirational. Students were hugely engaged by this and the follow-up task, in which they were required to research and devise questions to ask of the scientist.

For a Key Stage 4 geography coastal study, from Burton Bradstock in Dorset to Porlock Bay in Somerset, a student used ICT to help with a sequence of investigations to plan and organise her work. This helped to demonstrate initiative and originality in her work. Her use of ICT deepened her analysis and understanding.

She looked at long shore drift from a western to an eastern coastline and learnt that the greater the wind speed the higher the wave frequency. The student used an anemometer to measure and compare wind speed and to see if there was any correlation between wind speed and how many waves broke in a minute. She used computerised charts and graphs to help her analyse her data and draw conclusions as well as to depict and illustrate her findings about the impact of waves on coastal erosion. This also led to a study of the impact on the shape of pebbles and their angularity. The student had downloaded maps from the internet to show images of the two locations; she also used a digital camera to take photographs of them. The use of ICT helped to extend the student's learning, enabled her to be creative and helped raise the standard of her work.

88. In satisfactory lessons the weaknesses described in paragraphs 19 and 61 were often present. The most prevalent weaknesses were the absence of any systematic monitoring or assessment of the progress of students in ICT together with the lack of any evaluation of the contribution of ICT to improving outcomes. In some cases, low ICT achievement in Key Stage 3 held back students from making better use of ICT subsequently. The tendency noted already for too much concentration on ICT for communication and presentation sometimes led to its use merely to 'neaten' work.
89. Sometimes impressive ICT equipment was not put to best use because there was no overview of what purposes it should be used for, or audit of the effectiveness and range of its use. For example, in one school students had access to one laptop for every five students for an extended curriculum theme day; they would have participated more effectively if they had made handwritten records. In a history lesson at another school, the teacher led a final plenary review of students' work with an interactive whiteboard. The way in which this was used meant that there was no opportunity for students to see the correct answers or save accurate work for later revision. In a geography lesson, students enjoyed creating an animation of an earthquake but few of them made progress in their understanding of earthquakes and seismic events.

A small number of schools had purchased commercial software packages which were not adapted properly for school use.

90. Many of the schools were using interactive whiteboards routinely in subject lessons, and in the best examples students used them with confidence. The 14 good and outstanding schools gave a wide range of examples of other equipment and software used selectively and appropriately in many subjects, including modern languages, music, mathematics, science, geography, PE, psychology, and design and technology. A small number of examples existed of the use of handheld and touch-screen mobile devices. One school, in which ICT was judged good, had decided to invest especially in mobile technologies and a virtual learning environment, since 97% of its students had broadband access and this would enable the school to reduce its annual expenditure on fixed ICT equipment. Where schools had provided staff with laptops this was felt by senior staff to have had a very positive impact on staff utilisation of ICT both for tracking student progress and for use in the classroom.
91. During the period of this survey Ofsted published a number of reports on other subjects. Reports on modern languages, science, and design and technology commented specifically on the contribution of ICT to the effectiveness of the teaching of these subjects, as illustrated in the extracts below.

Modern languages

92. In the schools in which the use of ICT was good or outstanding it was used effectively to motivate students by for example:
- the imaginative use of common applications to develop speaking skills, writing and redrafting for accuracy
 - widespread use of digital recording to support students with special educational needs
 - the creation of blogs
 - informing students at school about what was happening on a languages exchange trip
 - video conferencing
 - making videos and commenting on the performance of other students
 - manipulating the interactive whiteboard games involving listening and reading via wireless mice.⁷

⁷ *Modern languages: achievement and challenge 2007–2010* (100042), Ofsted, 2010; www.ofsted.gov.uk/resources/100042.

Science

93. The effective use of ICT was having a positive impact on attainment in science in nearly two thirds of the schools inspected. In the schools where the impact was only satisfactory this was often because ICT was being predominantly used by the teacher to show information. The students in these schools were not given sufficient opportunity to use ICT for themselves.
94. The very best use of ICT involved students participating actively. Banks of laptops had made it possible for them to be used for work that was integral to laboratories, getting round the need to relocate to ICT rooms. Students used laptops for a range of purposes and applications, including:
- data logging
 - internet research
 - simulations
 - word processing
 - presentations
 - digital images
 - access to virtual learning environments.⁸

Design and technology

95. Where ICT, and particularly computer aided design (CAD) and computer aided manufacture (CAM), was readily available to support designing and making, it made a good contribution to students' learning. In the best practice observed, computer-based equipment was used effectively with traditional machines and hand tools to develop and extend students' understanding and experience of material and their knowledge of current manufacturing processes. This had a positive impact on the precision of making, as it enabled students to work to fine tolerances and resulted in them achieving a professional quality in the products they made.⁹

Part B: Current issues in ICT

96. This section of the report explores a number of specific issues which inspectors focused on at different stages in the survey, and which need to be tackled for schools to make further progress in their use of ICT.

⁸ *Successful science education in England 2007–2010* (100034), Ofsted, 2011; www.ofsted.gov.uk/resources/100034.

⁹ *Meeting technological challenges?: design and technology in schools 2007–2010* (100121), Ofsted, 2011; www.ofsted.gov.uk/resources/100121.

The use of assessment

97. In the light of the concerns raised in the previous report, inspectors evaluated the effectiveness of most schools' use of assessment to improve pupils' learning and achievement. The use of assessment was judged to be no better than satisfactory in 53 of the 86 primary schools visited for which this was observed, and 42 of the secondary schools, suggesting that the weaknesses identified previously persisted to a large extent in many schools.
98. However, in the schools where the use of assessment was good, a robust school-wide approach to assessment was used as a key tool for improvement. The common characteristics of this in the primary and secondary schools visited were:
- thorough baselining of pupils' current level was used, at entry to, or prior to starting the school
 - pupils were made aware of their current level and what they needed to do to improve
 - opportunities for peer and self-review were embedded in lessons
 - there was regular standardisation and moderation between teachers and particularly between schools
 - a progress tracking system accessible to staff and pupils and embracing ICT across all subjects was used
 - pupils were given detailed written feedback on their work
 - parents were kept regularly updated on their child's progress in ICT.
99. In the primary schools where assessment was judged to be good or outstanding, effective tracking systems assisted teachers, pupils and parents to focus on the priorities for progress for each pupil. In a few schools the school intranet was used to store electronic profiles, making access easy for pupils and parents. Pupils were knowledgeable about their current standards and personal targets for improvement. The effective use of 'I can' statements to track pupil progress was seen in several schools. Learning objectives, set out at the start and end of lessons, included an ICT objective alongside objectives relating to other subjects.
100. In the majority of the primary schools visited however, many examples were observed showing a lack of attention to the assessment of ICT. The headteacher of one school in which ICT was judged to be inadequate commented that there was no incentive to collect information on ICT levels or to monitor outcomes. In other schools some teachers had little understanding of what was required for a pupil to reach a certain level. In several schools no assessment of what pupils had achieved in ICT took place at all. In many schools performance in ICT was only assessed in specific ICT classes. This meant that pupils' considerable use of ICT in other subjects was not monitored

or built into planned development. In these schools moderation between teachers was rare.

101. Often pupils were not able to describe their current level, their targets or what they needed to do to achieve them. Feedback from teachers often focused on what pupils needed to do to improve the appearance of their work rather than on extending their knowledge or understanding. Feedback was often not recorded. A pupil in a school in which assessment in ICT was judged inadequate said, 'We have targets for numeracy and literacy so it would be good to have them in ICT. At the end of the lesson we just get up and leave the class. It would be good to know what we have to do to improve.'
102. There were examples of particularly good practice in the secondary schools visited. In those that were good or outstanding, comprehensive tracking systems were used to monitor student performance in ICT and led to the development of differentiated teaching plans to meet the needs of individual students. In a few cases these systems were starting to be used across the curriculum to ensure that students' progress in other subjects was fed back to the ICT department. A small number of schools received useful data from their feeder primary schools which helped them to baseline the ICT capabilities of their new students. In one school the secondary ICT teachers undertook the assessment of Year 6 students themselves. Students were involved in self- and peer review and in setting targets for improvement in discussion with their teachers. The quality of feedback from their teachers was detailed and matched against the requirements of the particular key stage. Where students were preparing for vocational awards or GCSE examinations, teachers gave specific guidance on those aspects of their work which required further attention.
103. In a small number of cases assessment feedback and additional guidance were available through the virtual learning environment. In one school there was a real-time assessment system which displayed an up-to-date picture of individual students' progress; the ICT staff could access the data for students to see how they were progressing, and the system was also available to parents. Students were beginning to make use of the system and ask teachers about the factors behind the grades awarded.
104. The examples below illustrate some of the best practice observed in assessment, though this was not typical of the general picture.

There were excellent systems in place for accurately assessing the standard of students' work. In ICT lessons teachers put considerable effort into providing students with detailed written guidance on what they had achieved and what they needed to do to improve. For Key Stage 4 students in particular, the clarity and explicit detail of the feedback on how to meet the coursework requirements made a significant contribution to the high pass rates in the vocational qualification.

Once a term ICT teachers entered assessment information into a sophisticated database. Teachers of other subjects also contributed assessment information about how well students had used ICT in their lessons. This enabled the school to track students' progress against overall National Curriculum levels as well as by the individual strands of the National Curriculum. Hence the school had an unusually comprehensive and detailed picture of the progress that students were making and was aware, for example, that standards in the use of control lagged behind those of other areas. Tracking enabled the school to identify any individuals who were in danger of falling behind and strategies were put in place to help them catch up. Parents received detailed reports about the capabilities of their child in all strands of the National Curriculum for ICT.

The use of assessment made an outstanding contribution to students' achievement.

In another school, all the students were set challenging targets based on their previous achievement. All the students knew what their targets were and exactly what they needed to do to reach that target in terms of the examination criteria. They also knew the generic skills they would need to develop in order to reach their target, including organisation and literacy. The targets were regularly referred to, both in whole-class time and when students were working on the computers individually. The tracking sheets were prominently displayed on the walls so that students could monitor their own progress, and the progress of the group. The virtual learning environment was used to track and monitor the deadlines for the work, with students emailing work to members of staff and receiving feedback. This feedback was specific to each student and considered both their targets and the examination criteria. Time was allowed in lessons to ensure that students could act on the feedback given and improve their work.

105. However, where assessment was no better than satisfactory in secondary schools, there was very little or no information on students' levels in ICT when they joined the school and little effort was made to determine their ability at the beginning of Year 7. In nearly all of these schools there was no assessment of students' ICT capabilities in lessons outside specialist classes. This was a serious weakness as it meant that information on the strengths and weaknesses in students' ICT performance across the curriculum could not be built in to the teaching programme or included in target-setting and feedback to individual students and their parents. The consequence of this was that higher-attaining students were often 'treading water' or repeating work unnecessarily.
106. For those students in Key Stage 4 who were not receiving specialist ICT teaching there was no systematic record of their learning in ICT and no means for teachers or students to know whether they had gaps in their knowledge. Such gaps could harm students' chances of success in future learning or training. Some examples of over-generous assessment were observed in the

sample at both Key Stage 3 and Key Stage 4. Although students in secondary schools were generally more aware of their standards in ICT lessons than pupils in primary schools, in a minority of the secondary schools, students did not know their level or whether they were making progress.

Curriculum and qualifications in Key Stage 4

107. The ICT curriculum and range of qualifications provided by many of the secondary schools in Key Stage 4 were not adequately preparing students either for more advanced academic courses in ICT and related subjects, or for technician-level further education and apprenticeships.
108. The weaknesses and imbalance in the requirements of the most popular vocational qualifications described in the previous report were found again in this survey. This imbalance, combined with other weaknesses described in Part A of this report, led to many students being held back from achieving their full potential in ICT by the end of Key Stage 4. In summary the other widespread weaknesses were:
- the lack of challenge for more able students which demotivated and deterred students from continuing with ICT beyond Key Stage 4
 - repetition of undemanding activities already covered in Key Stage 3
 - modules chosen by the school that often narrowed the learning and limited the achievement of the students.
 - excessive time spent on the compilation of coursework to meet the assessment requirements of the qualifications
 - a tendency by some teachers and teaching assistants to spoon-feed their students through the individual components of the vocational award, sometimes in effect completing the coursework for the student and eliminating the possibility of failure
 - no consistent approach to the planning, assessment or monitoring of ICT outside specialist ICT lessons, so that neither teachers nor students had a clear picture of their strengths or the gaps in their learning.
109. In the schools where students achieved well, a wide range of courses was on offer, or special arrangements had been put in place to compensate for the weaknesses in the coverage and demands of the vocational qualifications. These arrangements included the opportunity to study some AS-level modules or to attend sessions at the local college. Such examples, however, were the exception.
110. There were more encouraging signs from the new ICT diploma which was in the early stages of development or delivery at 23 of the secondary schools visited. Although the number of students taking the new qualification was small, teachers and students were appreciating the extra challenge of the course requirements, the course inputs from local businesses, the opportunities

for worthwhile work placements, and their use of the new national IT careers website.¹⁰

111. The number of students nationally entering GCSE awards in ICT and computing subjects has declined over the last three years. This has had a knock-on effect on the number of students studying at A level. It means that far too few young people are achieving the necessary platform of capability and motivation to progress to higher-level education and training in ICT- and IT-related subjects. This picture contrasts with the welcome recent national increases in take-up in science subjects and in mathematics.
112. It is important that the government's acceptance of the recommendations of the Wolf Review leads to schools being able to provide a Key Stage 4 ICT curriculum and qualifications offer which remedies these long-term weaknesses in a subject important to the competitiveness of the UK economy and to the future employability of young people.¹¹ Children's and young people's use of ICT at school and at home has grown significantly over the last 10 years, but the school curriculum and teaching approaches have not always kept pace with the rapid developments outside school. This weakness means that too many students miss out on both specialist ICT opportunities and the considerable range of cross-curricular ICT applications that can enrich learning and accelerate achievement.
113. It is time to look afresh at what most students might be able to achieve at the various key stages. It may now be possible for many students to gain a rounded foundation of ICT capability by the end of Key Stage 3, which will equip them well with the general and transferable skills and understanding required in all occupations and for learning at all levels. Students would then be able to take full advantage of ICT tools and applications to enrich and extend their learning in all subjects. Schools would be able to introduce a new and more demanding ICT and computing curriculum in Key Stage 4 which would provide pathways to both higher education and to technician-level training in IT and computing subjects.
114. Such developments would necessarily have important implications for staff qualifications, professional development and the ICT curriculum for the other key stages. E-skills, the sector skills council for the IT and telecoms sector, estimates that over half a million new entrants will be needed by UK employers in the sector over the next five years.¹² Addressing these shortcomings in Key Stage 4 will be of strategic importance to the future success of the UK economy and to the future employment prospects of young people.

¹⁰ BigAmbition website; www.bigambition.co.uk.

¹¹ *The Wolf review of vocational education – government response*, Department for Education, 2011; www.education.gov.uk/publications/standard/publicationdetail/Page1/DFE-00038-2011.

¹² *Technology insights*, e-skills UK, 2011; www.e-skills.com/research/research-publications/insights-reports-and-videos/technology-insights-2011.

Professional development of staff

115. Inspectors reviewed the extent and the effectiveness of arrangements for the professional development of staff in both the primary and secondary schools visited.
116. Regular audits of staff training needs in ICT took place in the majority of the primary schools visited. Class teachers and teaching assistants were usually included. A good range of training and updating opportunities was generally made available to meet the needs identified in these audits, though a small number of schools reported difficulty in sourcing appropriate professional development as a result of reductions in support from the local authority. Staff training arrangements included in-house workshops and drop-in clinics, external opportunities at professional development centres or commercial providers, and online tutorials or training packages.
117. In some schools the appointment of newly qualified teachers had brought higher levels of ICT skill into the school, to the wider benefit of staff and students. However, the content of professional development opportunities was mostly focused on the current ICT investments at the schools, such as the virtual learning environment implementation, rather than on meeting the deeper pedagogical challenges of the ICT curriculum, such as how to pinpoint common but significant errors and misconceptions in teaching. Very few examples were seen of any evaluation of the impact of the training on the effectiveness of teaching or on students' learning.
118. In the 74 secondary schools visited there were few examples of a systematic approach to auditing and meeting the ICT training needs of staff. In some schools the provision of professional development relied solely on individuals identifying their own needs and sourcing the training. Sometimes staff training in the use of basic ICT packages such as word processing or PowerPoint had brought staff capability up to the level of many of their students, but had not had any impact on teaching and learning or student achievement because staff had not yet embedded ICT use effectively into their teaching methodology. As in primary schools, the main focus of training was the implementation of the virtual learning environment, or new management information or tracking software. There were virtually no examples of input from local IT companies which might increase teachers' awareness of the uses of technology in the workplace.
119. However, in the schools with a highly committed leadership team there were examples of lively and comprehensive professional development programmes for staff. In these schools, heads of ICT departments were providing excellent training sessions regularly. Champions were sometimes identified among the staff to help disseminate new developments, and plans were made to cascade the learning from external courses across the school. Teaching assistants were encouraged to join timetabled GCSE ICT and vocational courses. In a small number of schools, staff were able to take advantage of training opportunities

available across their school federation or network. In one outstanding school, ICT staff were encouraged to attend the annual international education technology exhibition in London and to undertake study visits to schools abroad.

120. Given the continuing pace of innovation and development in ICT in education, and in technological advances in the workplace, it is clear that all schools will need to adopt a systematic planning cycle for the training and updating of ICT and other staff. The programme should not be limited to briefing staff on short-term practical implementation. To ensure that it is delivered effectively and efficiently, it is essential that staff training is evaluated in terms of its impact on learning and achievement, and built into the performance management arrangements of all staff.

E-safety

121. During the period of this survey, in February 2010, Ofsted published a report on e-safety.¹³ Despite mostly good provision for e-safety, training for staff was identified as a relative weakness in the schools visited. Training did not always involve all the staff and was not provided systematically. Even the schools that organised training for all staff did not always monitor its impact thoroughly.
122. The report found that e-safety training was usually weak when the headteacher had not delegated responsibility for it, or plans had not been made to include it within training in child protection or for ICT. The training tended to be informal only. Nine of the schools visited for the e-safety survey provided training and support for staff only in response to specific concerns.
123. This ICT survey confirmed the findings of the recent report and highlighted the importance of all primary and secondary schools continuing to adopt a proactive approach to managing safety, keeping policy and practice under continuous review and providing regular, updated training for all staff. Inspectors discussed e-safety issues with pupils in the 88 primary schools visited. Many of these pupils were spending considerable time online outside school with varying amounts of parental supervision. They demonstrated a generally good awareness of the importance of safe practice, including the use of panic buttons and never sharing personal details online. In discussions with pupils the issue of under-age use of social networking sites frequently arose. Such concerns reinforce the importance of all schools continuing to adopt a robust approach to managing safety and keeping policy and practice under continuous review.
124. The following example illustrates one school's proactive approach to ensuring pupils' online safety.

¹³ *The safe use of new technologies* (090231), Ofsted, 2010; www.ofsted.gov.uk/resources/090231.

The school was featured on Teachers' TV for its leading work on e-safety as part of Becta's work to highlight best practice. Two designated coordinators had produced detailed guidance for staff, students and parents about how students could keep themselves safe when online. This was supplemented by a series of assemblies and lessons to further develop students' awareness and understanding of the issue. A demonstration showing how a stranger might easily obtain personal information from social networking websites had made a strong impact on students who said they now followed the school's guidance for protecting themselves. Another group of students had been trained as 'cyber mentors' to support victims of 'cyber bullying' in their own school and in a partner school. Investigations of incidents were guided by a detailed flow diagram and specific e-safety pro-formas which informed other safeguarding processes and agencies as appropriate. The effectiveness and impact of e-safety was thoroughly evaluated.

Use of virtual learning environments

125. A virtual learning environment is a virtual classroom which allows teachers, pupils and parents to communicate with each other online. Information, learning materials, homework and assessments may be provided. Virtual learning environments are increasingly found throughout education including in further and higher education. In the previous ICT survey report Ofsted noted that schools were falling behind the national timescales for having a virtual learning environment up and running. Even those schools which had managed this were still thinking through the role of a virtual learning environment in improving learning. In the current survey inspectors specifically reviewed the progress being made in implementing virtual learning environments by 86 of the 88 primary schools visited.
126. In the second and third years of the survey almost all the 56 primary schools visited had partially or fully installed a virtual learning environment, and by the third year only four of the 25 schools visited had no virtual learning environment. However there was wide variation in the effectiveness and comprehensiveness of the use of virtual learning environments across the schools. There was also little evidence of the schools surveyed having yet evaluated the impact of the virtual learning environment on learning or achievement. Most of the schools were aware that those pupils and parents without access to a computer and connectivity at home would be disadvantaged in exploiting the full potential of the virtual learning environment. These schools were exploring a range of ways to assist these pupils such as through the Home Access scheme or loaning laptops.¹⁴

¹⁴ See note 4.

127. In the best examples, governors, staff, pupils and parents were all contributing to the development of the virtual learning environment and then using it for a variety of applications: planning; reporting to parents; accessing learning resources; assessment; newsletters; email and social networking. Pupils were able to upload their class work and homework, often using film and photographs, and they were proud of their material on the virtual learning environment. The virtual learning environment engaged them in learning outside the school day, and enabled their parents to play a more proactive role in supporting their children's learning. Sometimes schools also provided licensed software for parents through the virtual learning environment. In some schools, online training manuals were made available to assist staff and parents. This supplemented the extensive training that had been provided as part of the set-up phase. In one or two cases virtual learning environment implementation had been incorporated into the performance targets of the headteacher and other staff.
128. Where the implementation of the virtual learning environment was not complete or comprehensive, schools reported that there had been a lack of support from the local authority, delays caused by technical difficulties or lack of available training. Sometimes the virtual learning environment had been installed but not yet populated to be of use to staff or pupils. In these schools there was often a reliance on a single enthusiast, a teacher or governor, to resolve obstacles and delays.
129. In the small number of schools which had not implemented a virtual learning environment at all the main causes were:
- lack of commitment from the headteacher
 - delays in local authority action or follow-up
 - changes in the local authority's preferred supplier as a result of earlier issues in other schools
 - loss of ICT advisory and support posts in the local authority
 - password and security concerns.

Embedding ICT in learning

130. In Part A of this report there are many examples of schools' growing use of ICT equipment and materials to enhance learning in other subjects. Since the last survey there has been a marked increase in the availability of such resources. Throughout the period of this survey laptops and many other handheld devices were increasingly available in large enough quantities to provide flexible and accessible ICT opportunities for teachers and pupils. Many schools had also improved their broadband connectivity, often investing in wireless networks to increase access. Students were very positive about these investments which they typically saw as 'changing learning' and enabling them to study more independently both at school and at home. In both the primary and secondary

schools visited there has been a movement away from dedicated ICT suites to the more flexible deployment of laptops and specialist ICT equipment. In the well-resourced schools seen, pupils were able to select with confidence the tools, software and media best suited to particular learning aims and activities.

131. By the end of the survey, a small number of schools were developing a new approach to the provision of equipment and software. These schools were encouraging pupils to use their own tablets or other devices. This was seen as a more sustainable strategy for the longer term which would reduce the pressure on school budgets while also fostering the engagement of pupils and their parents in learning at school and at home.
132. Many headteachers and heads of department or coordinators in improving schools were convinced that the growing use of ICT in a range of subject areas was leading to both increased staff motivation and improved outcomes for pupils. The evidence from this survey suggests that this was the case where ICT was being deployed effectively as part of a strategic approach to the improvement and development of the school. The impact was less evident where increased use was merely a result of the purchase of additional computers from a grant, or a response to the passing enthusiasms of individual staff. Generally, schools will need to improve their approach to the evaluation of the impact of ICT on pupils' achievements to ensure that resources are used to best effect.

Securing best value in ICT investment

133. In the last ICT report, Ofsted reviewed the extent to which the schools surveyed had applied the four principles of best value in their ICT spending. It found that although the first principle of ensuring effective competition was well met, that was not the case for the other three: comparing performance with others; challenging how and why a service is being provided; and consulting stakeholders. This meant that some schools had not obtained good value for money.
134. In this survey, although a number of the same weaknesses were found in many of the schools visited, examples were seen of effective procurement practice. However, effective practice will remain a challenge for all the schools as they seek to take best advantage of the increasing range of ICT products and services available. All the schools visited had made investment in ICT infrastructure, equipment and resources during the period of the survey with notable increases in mobile devices, laptops and virtual learning environments. In a few cases this had improved the overall ratio of pupils to PCs to 2:1 and resulted in ICT-rich learning environments throughout the school. There were also many examples of schools investing in swipe card ID, registration and payment systems, and a range of data management and pupil tracking packages.

135. As in the previous survey, the first principle of 'competition' was met as a result of local authority regulation and audit requirements. This did not mean that the tenders received were necessarily the best alternatives available. The reasons for this are indicated in the analysis of performance against the other three principles below. A few schools complained that the terms of their private finance initiative (PFI) agreement prevented them from undertaking competitive tendering for ICT equipment or services. Others noted that contracts for management information systems arranged through their local authority were apparently not regularly put out to competition.
136. **Comparing performance with others to see where improvements could be made:** many schools received support from local authority staff in comparing costs and specifying requirements. Some of these schools were considering becoming academies and would not have access to local authority procurement specialists in the future. A few schools used other sources of benchmarking information and expertise such as the Department for Education, the National Audit Office and Becta websites. Some of the 88 primary schools were assisted by their local secondary school or further education college. As noted in the last report, those schools which had compared the costs of non-standard and open source systems and hardware and the most common commercial office products found that they were able to make significant savings which could then be reinvested in further equipment or software. Pupils in these schools also benefited from the opportunity to develop transferable ICT skills rather than mastering only a single platform. Sometimes low-cost or free software was also more suited to particular educational purposes, as pupils could freely download it to use at home.
137. **Challenging how and why a service is being provided:** governors and senior staff in a number of the schools visited committed time to investigating the school's detailed ICT requirements before considering the purchase of specific products or services. Governors with a background in business or ICT were often very useful. In one outstanding school a clear route map had been developed with a rolling plan for investment and continuing evaluation of the impact of previous spending. In another school the ICT investment plan arose from the school's 'anywhere, any time' vision for learning and was at the centre of its development plan.
138. However, in many schools planning was not systematic and there was very little or no evaluation of the impact of previous ICT spending. There were very few examples of schools being fully aware of the consequences of the depreciation of their current ICT estate.
139. Schools were becoming more aware of all the ancillary costs of running substantial IT networks in addition to the initial purchase costs of equipment. In the final year of the survey, schools were also concerned that in the future they might need to purchase a broadband connection, software licences and other support from their own core budgets, without the cost savings of being part of an aggregated purchase through their local authority. Some schools were able

to calculate the total cost of ownership of their plans. A small number of schools were investigating the potential benefits and savings in licence fees through remote hosting of data.¹⁵ Such a change might also make off-site access to the virtual learning environment more easily available to staff, pupils and parents. A few schools had terminated inflexible leasing agreements and one or two were considering withdrawing from the purchasing arrangements of their PFI scheme because of the perceived high costs and inflexibility.

140. **Consulting stakeholders:** in the latest survey there was more evidence of schools consulting staff, pupils and parents on future ICT priorities. In a number of schools visited, task groups of senior staff and governors had invited views from staff and pupils on the effectiveness of current ICT provision and further requirements. In some schools an ICT user group had been established for staff, pupils and parents. Many schools asked pupils for their ideas and then involved them in testing and trialling items prior to making purchasing decisions. In one school, pupils had assisted in the design and testing of furniture for ICT and in another they had advised on the design of the school website and virtual learning environment. Several schools had undertaken audits of the ICT equipment available to pupils and parents outside school and were taking steps to provide laptops for as many pupils as possible. Some schools had encouraged disadvantaged parents to apply for grants for computers and internet connectivity through the former government's Home Access scheme.

¹⁵ The term 'remote hosting' describes an arrangement where an organisation's data and sometimes its computer servers are located away from the site of the organisation and operated by another organisation through a contract or collaborative arrangement.

Notes

This report is based on ICT subject survey visits to a sample of 90 primary schools, 74 secondary schools and three special schools, which took place between 2008 and 2011. The schools seen were from varying geographical contexts and included small, larger, rural and urban schools from across England. Schools which were in special measures or subject to a notice to improve, as a result of their last whole-school inspection, were not included in the sample.

During the visits, inspectors evaluated achievement, teaching, curriculum provision, and the leadership and management of ICT education. They observed lessons, including those where ICT was used in other subjects, scrutinised pupils' work and held discussions with pupils, teachers, and school and subject leaders. Aspects of ICT education selected for specific attention during different years of the survey included the use of ICT to promote achievement across the curriculum and the provision for e-safety.

In addition to evidence gathered during the survey, the report draws on evidence from Ofsted's last ICT report, published in 2008, and its report on the safe use of new technologies, published in 2010. This report also makes reference to comments on the use of ICT in other recent Ofsted subject reports.

Further information

Publications by Ofsted

The importance of ICT: information and communication technology in primary and secondary schools, 2005/2008 (070035), Ofsted, 2009;
www.ofsted.gov.uk/resources/070035.

The safe use of new technologies (090231), Ofsted, 2010;
www.ofsted.gov.uk/resources/090231.

Other publications

National Curriculum for ICT at Key Stages 1 and 2;
<http://curriculum.qcda.gov.uk/key-stages-1-and-2/subjects/ict>.

National Curriculum for ICT at Key Stage 3; <http://curriculum.qcda.gov.uk/key-stages-3-and-4/subjects/key-stage-3/ict>.

National Curriculum for ICT at Key Stage 4; <http://curriculum.qcda.gov.uk/key-stages-3-and-4/subjects/key-stage-4/ict>.

Websites

National Association of Advisors for Computers in Education (NAACE);
www.naace.co.uk.

Computing at School; www.computingatschool.org.uk.

e-skills uk; www.e-skills.com.

Open University Vital project; www.vital.ac.uk.

BigAmbition; www.bigambition.co.uk.

UK Safer Internet Centre; www.saferinternet.org.uk.

Child Exploitation and Online Protection Centre (CEOP) ThinkUknow;
www.thinkuknow.co.uk.

Annex A: Providers visited

Primary schools	Local authority
Accrington St Mary Magdalen's Church of England Primary School	Lancashire
All Saints Church of England Aided Junior School	Hampshire
Anson CofE (A) Primary School	Staffordshire
Arden Primary School	Birmingham
Ashton Vale Primary School	City of Bristol
Bader Primary School	Stockton-on-Tees
Barton Seagrave Primary School	Northamptonshire
Bearwood Primary and Nursery School	Poole
Blessed Robert Widmerpool Catholic Primary and Nursery School	Nottingham
Bourton-on-the-Water Primary School	Gloucestershire
Caldecote Primary School	Cambridgeshire
Castle Hill St Philip's CofE Primary School	Wigan
Christ Church CofE (C) Primary School	Staffordshire
Colvestone Primary School	Hackney
Cranberry Primary School	Cheshire East
Crosscrake CofE Primary School	Cumbria
Dairy Meadow Primary School	Ealing
Darfield Upperwood Primary School	Barnsley
Dean Barwick School	Cumbria
Droxford Junior School	Hampshire
Earley St Peter's Church of England Voluntary Aided Primary School	Wokingham
East Ravendale CofE Primary School	North East Lincolnshire
Ebor Gardens Primary School	Leeds
Fairholme Primary School	Hounslow
Firs Hill Community Primary School	Sheffield
Five Acres Primary School	Oxfordshire
Foredyke Primary School	City of Kingston upon Hull
Gay Elms Primary School	City of Bristol
Gilbertstone Primary School	Birmingham
Gunter Primary School	Birmingham

Hamble Primary School	Hampshire
Heyhouses Endowed Church of England Primary School	Lancashire
Hobletts Manor Junior School	Hertfordshire
Holmgate Primary School and Nursery	Derbyshire
Horndean Infant School	Hampshire
Horsley Church of England Primary School	Gloucestershire
Kilsby Church of England Primary School	Northamptonshire
Lea CofE Primary School	Herefordshire
Lindale CofE Primary School	Cumbria
Long Lawford Primary School	Warwickshire
Lowercroft Primary School	Bury
Lynncroft Primary and Nursery School	Nottinghamshire
Moat House Primary School	Coventry
Moulsecoomb Primary School	Brighton and Hove
Oakhill Primary School	Staffordshire
Oaksey CofE Primary School	Wiltshire
Overstone Primary School	Northamptonshire
Queen's Park Junior School	Bournemouth
Ravenhurst Primary School	Leicestershire
Rivelin Primary School	Sheffield
Roke Primary School	Croydon
Rosendale Primary School	Lambeth
Sacred Heart Catholic Primary School and Nursery	Southend-on-Sea
Scarcroft Primary School	York
Selsdon Primary and Nursery School	Croydon
Sonning Common Primary School	Oxfordshire
St Andrew's Church of England Primary School, Dearnley	Rochdale
St Andrew's Church of England Primary School	Oxfordshire
St Andrew's Church of England Primary School, Yetminster	Dorset
St Clement Danes CofE Primary School	Westminster
St George's CofE Primary School	Tameside

St Godrics Roman Catholic Voluntary Aided Primary School, Thornley	Durham
St Joseph's Catholic Primary School, Darlaston	Walsall
St Joseph's RC Junior School	Croydon
St Joseph's Roman Catholic Voluntary Aided Primary School, Ushaw Moor	Durham
St Leonard's Primary School	Staffordshire
St Margaret Mary Catholic Primary School	Cumbria
St Margaret's Catholic Primary	Derbyshire
St Mary's CofE Junior School	Haringey
St Patrick's Catholic Primary School	Cumbria
St Paulinus Church of England Primary School	Bexley
St Peter's Catholic Primary School, Waterlooville	Hampshire
St Saviour's CofE (VC) Primary School	Stoke-on-Trent
St Teresa's Catholic Primary School, Ashford	Kent
Stanton Drew Primary School	Bath and North East Somerset
Straits Primary School	Dudley
Quadring Cowley and Brown's Primary School	Lincolnshire
The Raglan Junior School	Enfield
Thorpepark Primary School	City of Kingston upon Hull
Tugby Church of England Primary School	Leicestershire
Valley Primary School and Nursery	Cumbria
Victoria Junior School	Cumbria
Wessex Primary School	Windsor and Maidenhead
West Witney Primary School	Oxfordshire
Weston Lullingfields CofE School	Shropshire
Whitecliffe Primary School	Redcar and Cleveland
Whitley and Eggborough Community Primary School	North Yorkshire
Wisborough Green Primary School	West Sussex
Wolverham Primary and Nursery School	Cheshire West and Chester
Yaxham Church of England Voluntary Aided Primary School	Norfolk

Secondary schools

Acklam Grange School A Specialist
Technology College for Maths and
Computing

Admiral Lord Nelson School

Bay House School

Biddenham Upper School and Sports
College

Blessed Edward Oldcorne Catholic
College

Brine Leas School

Cantell Maths and Computing College

Carlton le Willows Academy

Chamberlayne College for the Arts

Childwall School - A Specialist Sports
College

Consett Community Sports College

Coppice Performing Arts School

Danum School Technology College*

Durham Gilesgate Sports College and
Sixth Form Centre

Farnham Heath End School

Frederick Gent School

Hadleigh High School*

Heanor Gate Science College*

Heaton Manor School

Henry Mellish School and Specialist
Sports College*

Hodge Hill Girls' School

Holden Lane High School Specialist
Sports College

James Brindley High School*

Jarrow School

John O'Gaunt Community Technology
College

King Harold Business & Enterprise
Academy

Local authority

Middlesbrough

Portsmouth

Hampshire

Bedford

Worcestershire

Cheshire East

Southampton

Nottinghamshire

Southampton

Liverpool

Durham

Wolverhampton

Doncaster

Durham

Surrey

Derbyshire

Suffolk

Derbyshire

Newcastle upon Tyne

Nottingham City

Birmingham

Stoke-on-Trent

Stoke-on-Trent

South Tyneside

West Berkshire

Essex

King James's School	North Yorkshire
Lake Middle School*	Isle of Wight
Landau Forte College*	Derby
Langley Park School for Boys*	Bromley
Lilian Baylis Technology School	Lambeth
Malbank School and Sixth Form College	Cheshire East
Newquay Tretherras	Cornwall
Northfield School and Sports College	Stockton-on-Tees
Oakwood School*	Sheffield
Oldbury Wells School	Shropshire
Peacehaven Community School	East Sussex
Piper Hill High School	Manchester
Ridgeway School	Plymouth
Rose Bridge High School	Wigan
Salesian School, Chertsey	Surrey
Selston Arts and Community College	Nottinghamshire
The Sir John Colfox School	Dorset
Sir Joseph Williamson's Mathematical School*	Medway
Spennymoor Comprehensive School	Durham
Sprowston Community High School	Norfolk
St Benedict's Catholic School	Suffolk
St James's Church of England School and Sports College	Bolton
St Joseph's Catholic High School, Business and Enterprise College	Cumbria
The St Philip Howard Catholic High School	West Sussex
St Thomas More Roman Catholic High School Aided*	North Tyneside
Stocksbridge High School	Sheffield
Sturminster Newton High School	Dorset
Summerhill School	Dudley
Swinton Community School	Rotherham
Testbourne Community School	Hampshire
The Charles Read High School*	Lincolnshire
The Grove School*	East Sussex

The King Edward VI School	Northumberland
The Kingsway School*	Stockport
The Mirfield Free Grammar and Sixth Form*	Kirklees
The Neale-Wade Community College	Cambridgeshire
The Northcote School	Wolverhampton
The Petchey Academy	Hackney
The Pingle School	Derbyshire
The Roseland Community College*	Cornwall
Titus Salt School	Bradford
Trinity High School and Sixth Form Centre*	Worcestershire
Walton Le Dale Arts College and High School	Lancashire
Warblington School	Hampshire
Westleigh High School – A College of Technology	Wigan
Whitburn Church of England School*	South Tyneside
Wigmore School	Herefordshire
Woodford Lodge High School*	Cheshire
Wyedean School and 6th Form Centre	Gloucestershire
Special schools	Local authority
Chantry School	Hillingdon
Clare Mount Specialist Sports College	Wirral
The St Christopher School	Southend-on-Sea

* The provider has closed or converted to an academy since the time of the visit.