

AN EVALUATION BY THE EDUCATION  
& TRAINING INSPECTORATE

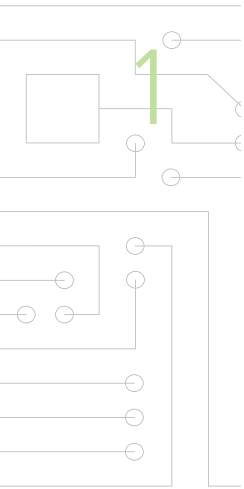
of Information  
& Communication Technology  
**IN PRIMARY SCHOOLS**  
**2001 - 2002**

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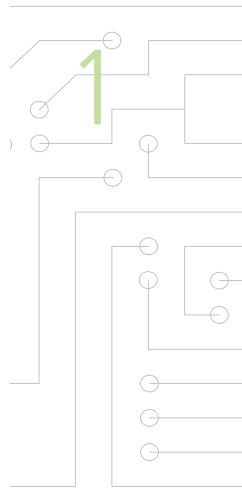
## 1. INTRODUCTION

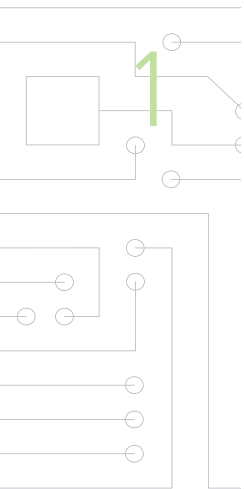
- 1.1 The report summarises the findings of an inspection of the influence of information and communication technology (ICT) in supporting and enhancing teaching and learning in primary schools in Northern Ireland (NI). The inspection was undertaken by the Education and Training Inspectorate (Inspectorate) during March 2002. The objectives of the inspection were to evaluate:
- i. the quality of teaching and learning using ICT;
  - ii. the quality of planning for the development of ICT across the school;
  - iii. the quality of resources available to support the development of the children's ICT competence.
- 1.2 This is an important time for the development of ICT in NI schools. The Government is investing considerable funds to improve the ICT infrastructure and resources in schools. In addition, the range of technologies and applications available to young people is advancing rapidly and there has been a significant growth in access to ICT outside of school, mainly in the home. Children are becoming increasingly familiar with, and competent in using, digital technologies, and have high expectations of what they can achieve using ICT.
- 1.3 In September 1997, a comprehensive Strategy for Education Technology in NI was launched. Although parts of the strategy are still at an early stage of implementation, this initiative is resulting in significant investment in ICT in schools. The main aim of the strategy is to equip young people with the ICT competence they need for the emerging knowledge-based society. A second and parallel aim is to ensure that teachers undertake professional development in the appropriate use of ICT to support and strengthen teaching and learning. The implementation of the Strategy for Education Technology in NI is in progress; the main strands are:
- the 'Connecting Teachers' initiative which has resulted in the distribution of around 12,000 laptops and 1,000 data projectors to schools;
  - the establishment of the Northern Ireland Network for Education (NINE) website as the NI node of the National Grid for Learning (NGfL);
  - the procurement and delivery of Classroom 2000 (C2k) a managed ICT service to schools, which is now underway; through C2k, all participating schools will be supplied with networked computers, a broad range of good quality educational software content, and connection to a range of on-line services such as the Internet and e-mail; the installation, maintenance and sustainability of the service are undertaken by specialist providers, organised through a public and private sector partnership initiative;

- the provision of the New Opportunities Fund (NOF) ICT training programme for teachers and librarians; over 99% of NI schools have signed up to undertake NOF training; the completion date for this training is March 2003;
- the further development and extension of the NI Council for Curriculum, Examinations and Assessment (CCEA) Scheme of Information Technology (IT) Accreditation to include children at key stage (KS) 2;
- the review of the position of ICT in the NI curriculum (NIC) and the potential use of ICT in on-line assessment.

- 1.4 Progress in the implementation of the various strands of the Strategy for Education Technology has been uneven. At the time of the inspection, the C2k managed service solution had been installed in around 13% of all primary schools.
- 1.5 This report is intended to establish a baseline for future work by the Inspectorate as the strategy is implemented more fully; its findings are based on evidence from the inspection of a sample of 32 primary schools (see Appendix 1). The inspectors visited 201 lessons across KS1 and KS2. Discussions were held with principals, members of the school management team, ICT co-ordinators, teachers and children. In addition, the inspectors examined samples of children's work, school development plans and other relevant curriculum documentation; they also identified a range of examples of good practice in the effective use of ICT in teaching and learning, and a sample of these has been included in the report.
- 1.6 Prior to the inspection, the senior managers of all schools were asked to complete a self-evaluation questionnaire in order to provide the Inspectorate with important background information and an overview of ICT in primary and post-primary schools. A high return rate of 82% was recorded, and the Inspectorate appreciates the contribution which the schools made to the database on which the inspection could draw.
- 1.7 A number of quantitative terms are used in the report when commenting on aspects of provision for ICT. These terms should be interpreted as follows:

Almost/nearly all	more than 90%
Most	75% - 90%
A majority	50% - 74%
A significant minority	30% - 49%
A minority	10% - 29%
Very few/a small number	less than 10%





- 1.8 In assessing the various features of the provision for ICT, inspectors relate their judgements to four performance levels which may be interpreted as follows:

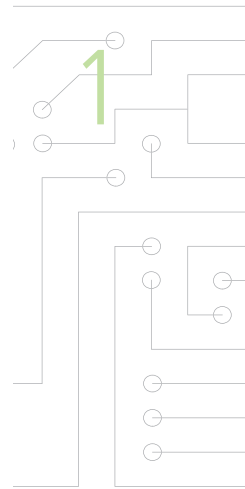
**Grade**

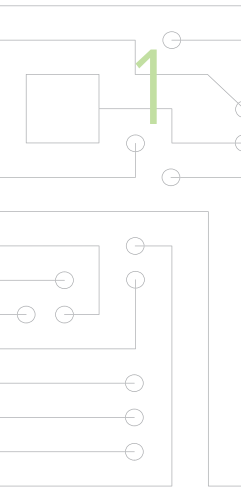
- |    |                               |                                |
|----|-------------------------------|--------------------------------|
| 1. | Significant strengths         | good (ranging to outstanding)  |
| 2. | Strengths outweigh weaknesses | satisfactory (ranging to good) |
| 3. | Weaknesses outweigh strengths | fair (ranging to satisfactory) |
| 4. | Significant weaknesses        | poor                           |

## 2

## 2. SUMMARY OF MAIN FINDINGS

- 2.1 Almost all schools demonstrate a strong commitment to the development of ICT across the curriculum; the majority of school development plans identify ICT as a key priority and contain effective strategies for enhancing the children's learning experiences and the teachers' expertise with ICT.
- 2.2 The quality of planning for the incorporation of ICT across the curriculum is satisfactory or better in two-thirds of the schools inspected. In the majority of schools, however, there is scope for the strands of measurement and control and modelling to be developed and integrated more fully into the teachers' planning.
- 2.3 The quality of teaching is satisfactory or better in around 80% of the lessons inspected. The use of ICT to support learning more effectively is increasing in the majority of the schools.
- 2.4 There is a growing use of ICT to enhance whole-class teaching. In addition, there are instances of effective group and paired work when using ICT in around one-half of the schools. The majority of children work well independently or collaboratively with computers and they are acquiring basic ICT skills.
- 2.5 In around one-half of the schools inspected, the children's ICT experiences lack breadth and variety; there are too few opportunities for the children to use ICT creatively. In many schools, there is a lack of consistency across the classes and year groups in the range and frequency of opportunities the children are given to learn and apply ICT skills.
- 2.6 In most schools, there is a need to develop further the assessment and recording of the children's ICT achievements. The majority of schools require better procedures to monitor systematically the children's progress and attainments in ICT.
- 2.7 There is a need for a more coherent and systematic approach to the planning and use of ICT to support children with special educational needs and to enhance work in literacy and numeracy.
- 2.8 The use of the Internet as a learning resource is under-exploited in the majority of schools.
- 2.9 The NOF ICT training has been successful in raising the profile of ICT within the schools and it is having a positive influence on the quality of the teachers' planning for and use of ICT across the curriculum.
- 2.10 In a significant minority of schools, there is evidence of a collegial approach to ICT in which the teachers share their knowledge, skills and good practice.
- 2.11 The schools which have C2k installed report high levels of satisfaction with the managed service solution.



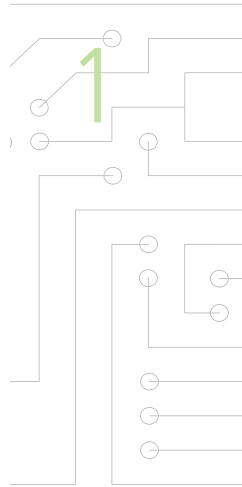


- 2.12 The ratio of children to computers varies widely across the schools, with an average of 14 children for each computer.
- 2.13 Just under 20% of schools have a dedicated computer room; the inspectors noted that there was an over-emphasis on 'drill and practice' ICT activities during many of the lessons in computer suites.
- 2.14 Around one-half of the teachers have laptop computers; most are used well for lesson planning and preparation, and often to support effectively whole-class teaching.
- 2.15 There are inconsistencies in the extent and quality of ICT support from the Curriculum Advisory and Support Services (CASS) of the Education and Library Boards (ELBs); in a significant minority of schools it is limited or inadequate.
- 2.16 Around one-half of the schools report that the lack of prompt and effective technical support is a major constraint in the development of ICT.

# MAIN REPORT

## 1. PLANNING FOR LEARNING WITH ICT

- 1.1 The quality of the teachers' planning for ICT is good to excellent in 21% of the schools inspected and satisfactory in 44%. In the remaining schools, weaknesses in planning for ICT outweigh the strengths.
- 1.2 In around one-quarter of the schools inspected, the teachers are increasingly aware of when and how to use ICT to good effect. Where the planning for ICT is good, the teachers provide sound guidance on the systematic development of the children's ICT skills across the four strands of IT competence and they identify clearly where ICT is to be integrated across the curriculum. In these schools, the planning takes sufficient account of progression in the children's use of ICT across the year groups and key stages. The majority of the teachers are aware of the children's experiences of using ICT outside school. In addition, the software packages available are evaluated effectively and matched closely to the children's different levels of ability.
- 1.3 In the majority of the schools, the teachers make effective use of ICT to improve lesson planning and preparation. They use ICT to produce booklets for topic work, reports for parents and a wide range of good quality learning materials and worksheets. They use the Internet well to access appropriate support materials and in a minority of schools the teachers have worked hard to evaluate and integrate, where possible, the software titles distributed by C2k into lessons.
- 1.4 There are weaknesses in the planning for learning with ICT in a significant minority of the schools inspected. The most common weaknesses are the lack of clear reference to ICT in the teachers' planning, and the insufficient account taken of progression in the development of the children's ICT skills across all four strands. In these schools, there is scope for the strands of measurement and control and modelling to be developed and integrated more fully into the schemes of work. In the majority of the schools inspected, the use of ICT to extend and enhance the work of the more able children is not well planned and is under-exploited.





## 2. TEACHING AND LEARNING

- 2.1 The quality of teaching is good to excellent in 28% of the lessons inspected and satisfactory in just over one-half. In the remaining lessons, weaknesses outweigh strengths with poor teaching observed in only 2% of the lessons. The use of ICT to support learning more effectively is increasing in schools and the majority of teachers are becoming more skilled in the incorporation of ICT into planning and teaching.
- 2.2 In the most effective lessons, the integration of ICT is planned well and the ICT-related activities enhance work in the curriculum area. The teachers have appropriately high and achievable expectations of the children's use of ICT. The tasks set are interesting and challenging; they develop the children's knowledge and understanding and consolidate and extend their ICT skills across the curriculum. The work in these instances is matched closely to the children's abilities and their ICT skills are developed systematically and coherently. The children are provided with a broad and balanced range of ICT experiences across the four strands. A suitable range of teaching approaches is used, including group, paired and individual work. In a minority of the schools inspected, the children are encouraged to use ICT outside school to undertake research and complete tasks.
- 2.3 The use of laptop computers connected to data projectors is exploited effectively to support the children's learning in the majority of schools. This resource is used in a variety of ways to enrich whole-class teaching, in particular, with the shared reading of stories, demonstrations of software applications, multimedia presentations and CD-ROM or Internet searches.

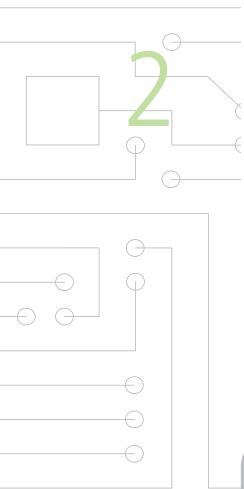
**Good use was made of ICT to consolidate the numeracy skills of the children in a year 4 class. They used effectively a software package to reinforce and extend their understanding of the concept of place value. The children settled quickly to the task and showed high levels of motivation, enthusiasm and enjoyment. The software level was chosen carefully by the teacher to match closely the needs and abilities of the children. The teacher managed the groups well, and ensured that the children using the computer were challenged appropriately, while at the same time, interacting with the rest of the class to achieve progression in their work.**

- 2.4 Word-processing is the most common ICT-related activity observed in the primary classroom. Effective teaching of word-processing enables children to develop better writing skills, to present ideas, to compose and revise on-screen and to incorporate graphical images where appropriate. Many children have opportunities to write for different audiences and to work collaboratively on projects, including with their peers from other schools. In a minority of

schools, the KS2 children extend their communication skills through effective use of multimedia presentation software, and they incorporate to good effect pictures, sound and video into the text.

**A class of year 6 children designed and produced an information leaflet for their parents about a trip they made to the Ulster American Folk Park. They worked in groups of four and made good use of desktop publishing and multimedia presentation software. The children had access to a range of digital photographs taken during the visit. In addition, one group accessed the Folk Park website to enhance the range of photographs available and provide additional information. Much of the work was undertaken away from the computers as they planned and discussed the layout of the presentation and accompanying information leaflet. When using the computers, appropriate intervention by the teacher ensured that the children made effective use of the time and most made good progress. The presentation of their work to a parental audience stimulated the children to pay close attention to the content of the leaflet and quality of the writing.**

- 2.5 There are weaknesses in teaching using ICT in around one-fifth of the lessons. Much of the work in these lessons lacks challenge and the children undertake routine tasks which are unrelated to the lesson objectives. Often the children's learning, understanding and ICT skills are not enhanced due to the narrow scope of these activities. In the less effective lessons, the use of ICT is planned poorly and the children use the computer for no specific purpose after completion of their classwork. In these instances, there is insufficient intervention by the teacher to support the children's work or confirm their understanding through questioning. In a significant minority of the schools inspected, the children's ICT experiences lack breadth and variety; there are too few opportunities for the children to use ICT creatively, to compose on-screen or to solve problems. In many schools, there is a lack of consistency across the classes and year groups in the range and frequency of opportunities the children are given to acquire and apply ICT skills.
- 2.6 The effective use of ICT offers much potential to improve the children's literacy and numeracy skills and can provide useful support to those children with special educational needs. Through C2k, all schools have an increasingly comprehensive range of software. The teachers report that much of this software is worthwhile and can be used flexibly to support the children's work in literacy and numeracy. A number of good examples of the use of ICT to support work in literacy, numeracy and special educational needs were noted. In a minority of the lessons inspected, the teachers made effective use of specialised features of word-processing software, such as text-to-speech conversion, word books and lists, to



improve the children's writing and reading skills. The speech feedback facility in the word-processing software supports the children in undertaking phonics exercises, through reading their own words and editing their writing. In these lessons, the teachers match carefully the software levels to the children's abilities.

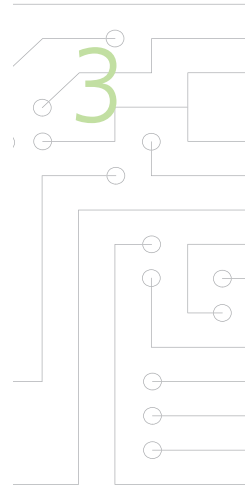
- 2.7 In around one-half of the schools, there are instances of effective group and paired work when using ICT. The children display high levels of collaboration and co-operation as they work on challenging group tasks. In these lessons, the children benefit from opportunities to discuss and develop ideas, explore alternatives, express opinions and apply ICT skills to solve problems. Only a minority of schools have integrated effectively their planning for ICT into the policies for literacy, numeracy and special educational needs.

**In a small primary school, ICT was used well by the teachers to make the work more interesting for the children in need of additional learning support. In one lesson, the children read the book on-screen and interacted with the characters. As a follow-up activity, they composed on-screen their own version of the story, concentrating on the traits of a character. The activities challenged the children well, the approach stimulated their interest in reading and writing and reinforced their ICT skills.**

- 2.8 In around one-third of the schools inspected, the teachers are supported ably by classroom assistants who have some expertise and interest in ICT. They interact well with individuals and small groups of children when they are engaged in ICT activities.

### 3. ASSESSMENT OF ICT

- 3.1 The assessment of children's achievements and competence in ICT is good to excellent in 16% of the schools inspected and satisfactory in 29%. In the remaining schools, the weaknesses in assessment outweigh the strengths with poor on-going assessment of ICT in 17% of the schools.
- 3.2 The children's attainments and progress in ICT are assessed, monitored and recorded regularly in only a minority of the schools. In the best practice, the teachers have agreed a framework for the development and assessment of the children's ICT skills for each year group and at the end of each key stage. This arrangement identifies clearly how the children's ICT skills are to be enhanced and applied through appropriate subject related activities. In a few schools, the children's progress in ICT is reported to parents. At the time of the inspection visits less than 10% of all primary schools were registered in the CCEA Scheme of IT Accreditation at KS2. The schools involved in the scheme report that it is a useful means of assessment and accreditation of the children's attainments in ICT at the end of KS2. This external accreditation of year 7 children has raised the profile of ICT in these schools and has accelerated and strengthened the development of ICT across a range of curriculum areas.
- 3.3 In most schools there is a clear need to develop further the formative assessment of the children's ICT skills. The systematic monitoring and assessment of the children's achievements in ICT are not widespread nor consistent across the year groups, and are at an early stage in many schools. The majority of teachers require additional professional development in the assessment, monitoring and recording of children's competence and achievements in ICT.



## 4. THE CHILDREN'S EXPERIENCES

- 4.1 Almost all of the children are motivated by the inclusion of ICT in lessons and they are increasingly comfortable with using computers and electronic devices. The majority of the children work well independently or collaboratively when using ICT.

**In a year 1 structured play session, the children worked together in small groups of two or three to consolidate understanding of number estimation and spatial awareness through the use of the Roamer. They entered simple directions and predicted where, on a large floor number line, the Roamer would stop. Through in-depth discussion, the children's understanding of direction and space was reinforced effectively and they enjoyed the activities.**

- 4.2 The majority of the children are acquiring basic ICT skills. In the early years, they are gaining confidence in the use of the mouse to control the cursor. They can start up, use and close programs; they are able to carry out straightforward searches of CD-ROM reference materials and, on occasion, use the Internet. By the end of KS1, the children make increased use of different software applications to practise and improve their writing skills. They are able to enter and edit text and use a range of text formatting features; many are able to insert appropriate graphics and images from digital cameras. In around one-half of the schools, the children make good use of simple creative art packages to produce work for display and presentation. The children in around one-third of the schools have good opportunities to control programmable devices such as floor turtles. They are able to enter instructions and directions, make predictions and experiment with a range of angle sizes. In KS1, in the majority of schools, the children make good use of computer games and simulation software to manipulate numbers and to consolidate their understanding of simple fractions and measurement. In contrast, there are relatively few opportunities provided for children in KS1 to make use of information-handling software to gather, store, manipulate and interrogate information in subject work.

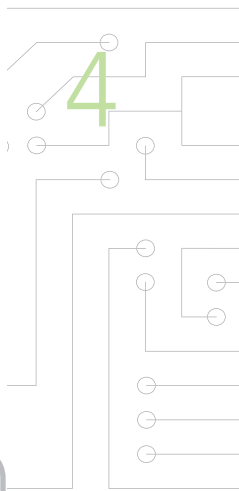
**ICT was used effectively by year 7 children to support the study of a seashore habitat. The children had visited the local seashore and worked in groups to collect and record information on the minibeasts and plants encountered there. They used a digital camera to take photographs of the various minibeasts and features of the seashore. During the lesson, the children classified and entered their data into database software, utilising the headings from the data collection sheet completed on the seashore. In one of the groups, the children were familiar with presentation software; they created a good quality multimedia presentation on the visit to the seashore which was used appropriately as a focus for a whole-class discussion. The children were encouraged to discuss their findings and to hypothesise on the relationships between the minibeasts which they had identified and the local plant life.**

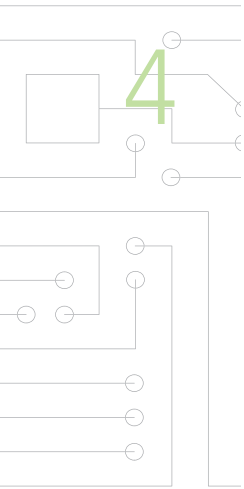
- 4.3 In KS2, many of the children are competent in the use of word processing and information-handling software. In the best practice, the children compose and revise work on-screen, and make appropriate use of graphical images to enhance the quality and presentation of their work. In the majority of schools, however, much of the word processing is written out initially by hand, checked by the teacher and then copied on to the computer. As a result, the computer time is not optimised fully to enhance the children's learning. In a significant minority of the schools, the children are making effective use of digital cameras and presentation software to enhance work across the curriculum. Many of the children in these schools can transfer digital images from the camera to the computer and are able to employ a range of basic tools from photo-editing software to amend and enhance the images to suit their purpose.

**Children in year 3 made effective use of painting software to design a poster illustrating aspects of electrical safety. The children worked in pairs and engaged in lively discussion to determine the layout and content of the poster. They were encouraged by the teacher to consider the audience for the poster. They used to good effect a wide range of the available tools such as smudging, shading and watercolour in order to enhance the quality of the work. They experimented with various colours and effects and discussed the outcomes with one another and the teacher. The teacher encouraged each pair to explain the theme of their posters after they had been printed.**

- 4.4 In a significant minority of schools, the children in KS2 use database software well to support subject and topic work. In the better practice observed, the children work collaboratively to design appropriate data collection sheets, collect, classify and enter the information into the database. The children use the database and other software efficiently to analyse findings and present output in a variety of ways, including graphs, charts, written text and multimedia presentations. They have good opportunities to pose and answer questions, interpret bar and line graphs and produce appropriate conclusions combining text, pictures and graphs.

**Children in year 4 worked in groups to undertake small-scale research into the effects of exercise on pulse rate. In previous lessons the teacher and children had accessed two appropriate websites to explore the factors which contribute to good health, including diet and exercise. Each group had produced a poster to encourage people to take more exercise and these were displayed on the classroom wall. They carried out timed exercises and recorded the results on a data collection sheet. The children recorded one another's pulse rates while at rest, walking and running. They entered the results into a pre-prepared database and engaged in discussion to determine the most suitable forms of output for their findings. They agreed on and created line graphs showing the effects of exercise on pulse rates.**





- 4.5 Just under one-half of schools provide the children with a sufficiently broad and challenging range of ICT skills. In these schools, the children have good opportunities to develop and apply skills across all the strands of IT and the progressive development of their skills is planned effectively across the year groups. There is a need, however, for the majority of the schools to promote and provide a more consistent approach to the development of ICT within and across the key stages, and to ensure appropriate breadth, balance and progression in ICT skills for all the children. In many schools, the children have few opportunities to learn how to use spreadsheets, to create and manipulate graphical images or to use the communication facilities offered by ICT.
- 4.6 CD-ROM reference materials are used well in a significant minority of the schools. In both key stages, the children in these schools have ample opportunities to enhance their information-handling and analytical skills. They are able to complete refined searches of the reference materials, make judgements on the relevance and quality of the information retrieved and amend it appropriately to suit the purpose of their work. In several instances, the KS2 children were able to present clearly the outcomes of research using multimedia presentation software.
- 4.7 Although the Internet provides the teachers and the children with access to a wide variety of resources and information, it is under-exploited currently in the majority of primary schools. This is due largely to the poor levels of Internet access and bandwidth within the primary classroom. In the minority of schools where the Internet is used effectively, the teachers control access carefully and direct the children to suitable and useful websites. The children use the Internet browsing software to good effect, understand the terminology associated with the Internet and are able to download text and images to support their work. In the best practice, the children are encouraged to evaluate and sift the information found in order to judge its relevance for the lesson activity. The children in only a small number of schools have the opportunity to compose, send and receive e-mails.

**Year 7 children shared work on a class novel with peers in another school. They read the novel in previous lessons and worked in groups to write the concluding chapter, developing the characters and events already encountered. The children engaged purposefully in an on-line tutorial with peers in the other school and used e-mail to discuss a range of ideas about the conclusion to the novel. They developed a good understanding of how certain events can change the course and outcome of a story. ICT was used imaginatively to extend and challenge the children's thinking on a literary topic. The lesson included group work, effective whole class teaching using a laptop computer connected to a data projector and good opportunities for the children to hypothesise and draw out conclusions.**

4.8 Figure 1 illustrates that word-processing is the most common activity undertaken by children in primary schools. The children also have regular opportunities to use simulation software and to control devices, mainly floor turtles. However, there are few opportunities for them to undertake work involving logo, multimedia software, creation and manipulation of digital images and communication by e-mail or videoconference.

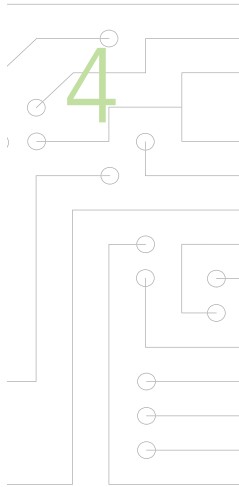
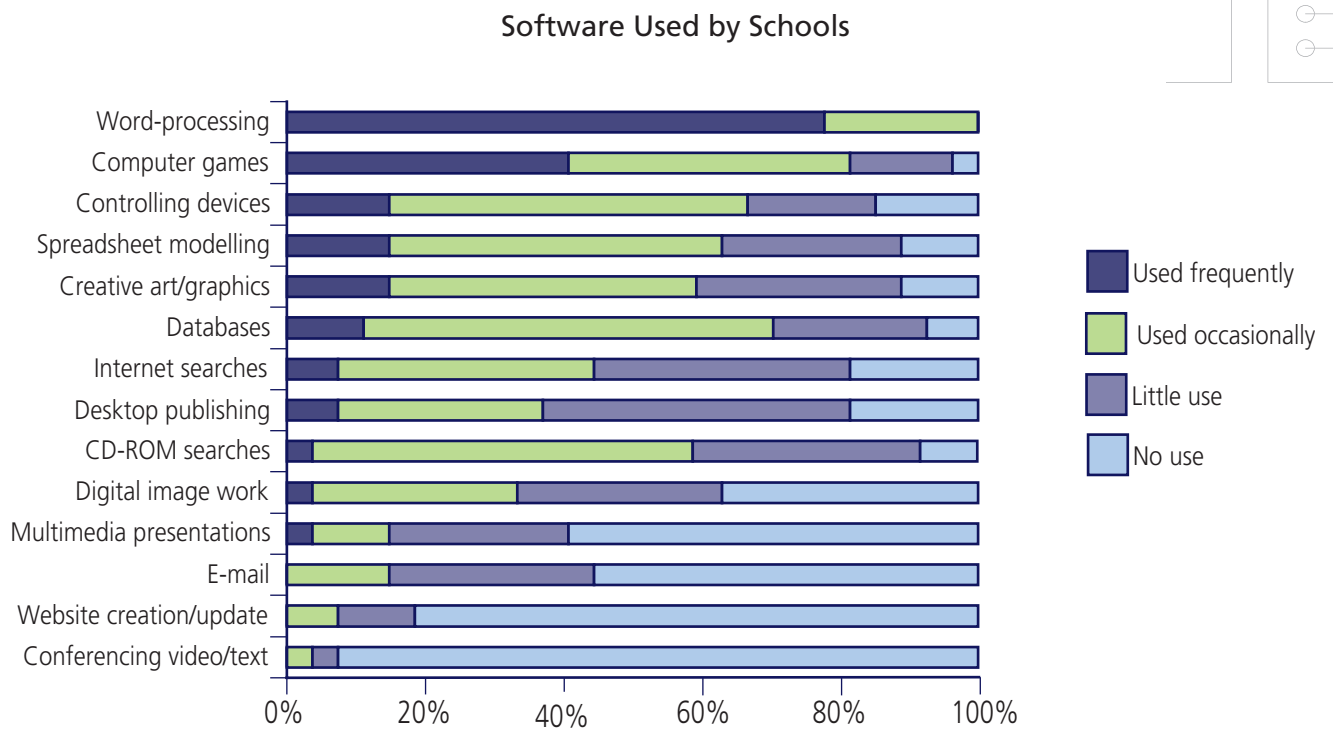
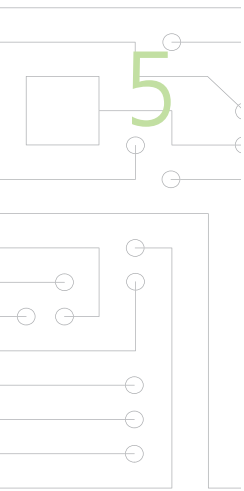


Figure 1



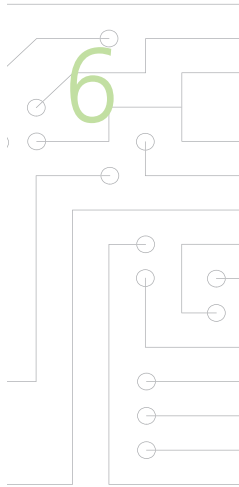


## 5. MANAGEMENT AND LEADERSHIP

- 5.1 Almost all schools demonstrate a considerable commitment to the development of ICT within the curriculum, and dedicate substantial resources, time and energy to implementing ICT into their teaching programmes. The majority of school development plans (SDPs) emphasise ICT as a key priority and contain an effective strategy for enhancing the children's learning experiences and improving the teachers' expertise in ICT. Detailed action plans outline the specific targets and the expected outcomes for the continued integration of ICT.
- 5.2 Effective leadership from the principal is vital in order to ensure that all of the children have consistent and coherent experiences in ICT. The principals in a significant minority of schools have a clear vision of the importance and application of ICT in teaching and learning; they are committed to providing good guidance for the on-going development of the ICT skills of the children and the teachers. The ICT co-ordinators in these schools receive appropriate support from school management for their work in leading and managing ICT development activities. They carry out a range of crucial activities; these include the evaluation of the new software titles for schools, the provision of good quality exemplar materials and support for the teachers, the planning of meetings in which the use and potential of ICT are discussed and the production of detailed schemes of work for the use of ICT across the curriculum. Many schools have benefited from a collegial approach to staff development. This has enhanced team spirit among the staff and led to the establishment of mutual support networks, often with teachers in other schools. In the majority of schools inspected, however, there is a lack of strategic direction and the pace of development is unduly slow; this results in incoherent experiences in ICT for the children.
- 5.3 Effective procedures to monitor and to ensure the consistent and progressive development of ICT are an important aspect of the work of all schools. The majority of schools require better procedures to monitor systematically the teachers' planning for and the children's progress and attainments in ICT across the curriculum. The formal monitoring and evaluation of the children's progress by the principal and ICT co-ordinator is good in only a significant minority of the schools.

## 6. STAFF DEVELOPMENT

- 6.1 The New Opportunities Fund (NOF) ICT training is a major national initiative designed to provide the framework for supporting teachers. In almost all schools the teachers have either completed or are in the process of completing NOF ICT training, and this programme has made a significant contribution to the continuing professional development of many teachers. In addition, the teachers are beginning to familiarise themselves with the software provided by C2k, and are making good use of the laptop computers and data projectors they received.
- 6.2 The majority of school development plans give a high priority to and set out a clear training strategy for the ICT in-service training (INSET) of teachers. The SDPs are often accompanied by realistic action plans, matched closely to the objectives of NOF training. The INSET programmes address fully the teachers' needs and are effective in assisting schools to meet targets for staff development. A range of school-based and school-focused activities, often organised by the teacher-leader or ICT co-ordinator, help to improve teacher competence in ICT. The teachers' understanding of when, when not, and how to use ICT has been enhanced.
- 6.3 There is clear evidence that INSET and NOF training are having a positive influence on the teacher's planning for and use of ICT across the curriculum. The NOF ICT training is well-planned and organised in the majority of the schools and has been successful in raising the profile of ICT within these schools and in enthusing many teachers. Among the positive effects noted are the enhanced confidence and improved competence of the teachers, often leading to the greater integration of ICT into lessons. A majority of schools, however, need to integrate more fully ICT into the curriculum and ensure continuity and progression in the children's learning. In addition, the closer linking of ICT to the development of literacy and numeracy would benefit greatly the children's learning. In a significant minority of schools, there is evidence of a collegial approach to ICT in which the teachers share their knowledge, skills and good practice; this is valued by the teachers.
- 6.4 Although the monitoring of teachers' expertise in ICT takes place in the majority of schools, arrangements for the evaluation of the impact of INSET on classroom practice and on the quality of the children's learning and attainments are mostly informal and inadequate.
- 6.5 Most schools have availed of ICT support from the Curriculum Advisory and Support Services (CASS) of the ELBs. In about one-half of the schools, the support offered is appropriate and matched well to the needs of the school and the teachers. There are, however, inconsistencies in the extent of ICT support for teachers; in a significant minority of schools it is limited or inadequate. In addition, CASS needs to adopt a more even-handed policy to supporting the ICT needs of schools, irrespective of the training provider they use.



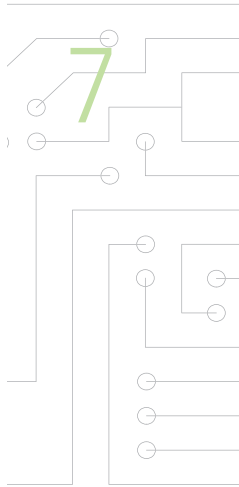


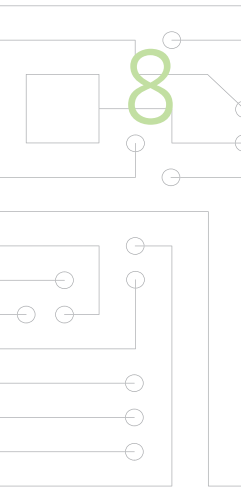
## 7. ACCOMMODATION AND RESOURCES

- 7.1 The accommodation and resources for ICT are good in 26% of schools and satisfactory in around 35%. In the remaining schools, the weaknesses in accommodation and resources outweigh the strengths, with poor accommodation and ICT resources in 13% of the schools. At the time of the inspection visits, the C2k managed service solution had been installed in only 13% of schools. The schools with C2k installed report high levels of satisfaction with the range and quality of the hardware and software.
- 7.2 The ratio of children to computers varies widely across the schools, with an average of approximately 14 children for each computer. Personal Computers (PCs) make up about 57% of the computer stock in primary schools. There is a considerable reliance on computers with a low technical specification; these are dated or obsolete. At the time of the inspection visits, only 20% of the computers in primary schools were up-to-date high specification multimedia computers. The computers in most schools are distributed to good effect in classrooms or in small clusters in shared resource areas. The children have ready access to the computers and most are used effectively to support work across the curriculum. Just under 20% of schools have a dedicated computer room; the inspectors noted that there was an over-emphasis on 'drill and practice' ICT activities during many of the lessons in computer suites.
- 7.3 Almost all primary schools have a good range of peripheral equipment available to teachers and children; 67% have at least one digital camera, 65% have a scanner and almost all have data projection equipment. Around 10% of schools have video conferencing equipment and a small number have invested in interactive whiteboard technology. Only 22% of primary schools have a website and just over 50% have an acceptable use policy for the Internet as a safeguard against inappropriate use.
- 7.4 For schools where C2k had not yet been installed, access to the Internet is generally poor. Only 25% of computers are connected to the Internet. In almost all of the schools, the use of e-mail to support learning is not widespread and has remained at an early stage of development. Only 20% of the schools provide the children with appropriate e-mail access.

**As part of the 'Dissolving Boundaries through Technology in Education Project', the children in a year 7 class took part in joint curricular work on a literary theme with their peers in the Republic of Ireland. They researched, presented and discussed to a high standard their ideas about their class novel and they communicated and corresponded through regular video-conferencing and e-mail. The children participating in this project are acquiring a useful range of ICT and other skills, and the project is contributing significantly to the school's programme for Education for Mutual Understanding (EMU).**

- 7.5 Around 52% of the teachers have laptop computers, mostly distributed through the Connecting Teachers Initiative as part of C2k. These computers are used appropriately by most teachers to enhance lesson planning, to prepare learning materials and to support whole-class teaching. Access to the laptop computers has contributed significantly to improving the personal competence of teachers. Most of them are able to source and manipulate web-based materials and communicate electronically using e-mail. The inspectors noted many instances where children made use of the laptops, individually or in small groups, to support subject work effectively.
- 7.6 Around one-half of the schools reported that the lack of technical support, or the delay in the response to ICT problems, inhibited progress in the development of ICT.



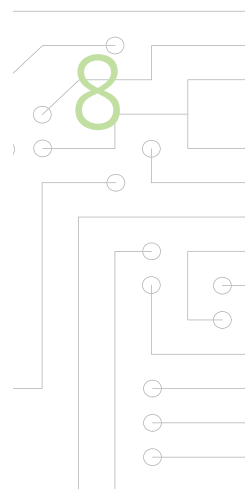


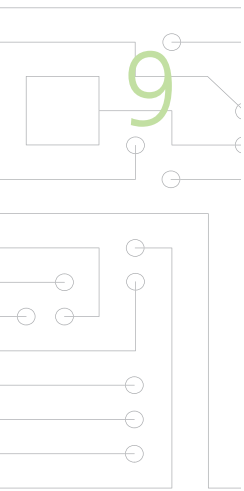
## 8. SCHOOL EVALUATIONS OF ICT PROVISION

8.1 In the questionnaire sent to all schools, members of senior management were asked to evaluate ICT provision within the school. The evaluations provide a detailed insight into the progress made by schools in relation to improving ICT. The development of a culture of critical self-evaluation of the effectiveness of the provision for ICT is an important area for development for almost all schools. According to the findings of the self-evaluations completed by the schools:

- the integration of ICT into the school development plan is well-developed, with over 80% indicating full or strong integration of ICT;
- almost 80% indicate little or no access by children of the Internet;
- only 16% state that ICT is used well to support children with special educational needs; almost 46% report little use of ICT to support children with special educational needs;
- almost 65% report significant use of ICT to support the development of children's literacy and numeracy;
- just under 80% report little or no assessment or recording of children's achievements in ICT;
- around 55% indicate that ICT resources are poor or inadequate;
- just over 50% report little or no monitoring and evaluation of children's access to ICT by senior management; only 13% report that access to ICT by the children is monitored closely by school management teams;
- around 48% report that ICT is used well to support management; almost 27%, however, report little use of ICT for this purpose;
- around 27% report significant use of CASS to support ICT developments; a further 40% report some use of CASS to support work in ICT; in contrast, the remaining schools indicate little or no use of CASS to support ICT work;
- where teachers have undertaken NOF ICT training, 32% report that the training made a highly significant contribution to the development of ICT in the school; a further 39% report that the NOF training had a significant impact, while 29% report little or no impact from the training;
- almost 70% report good procedures for the evaluation and dissemination of the outcomes of ICT INSET;
- around 94% note good awareness by school management teams of the ICT competence of the teachers.

- 8.2 As part of the inspection, the schools' self-evaluation findings were compared with the evidence from inspection. This report confirms that the school self-evaluations were mostly undertaken effectively, and that the findings from the self-evaluations match closely the findings of the Inspectorate.





## 9. CONCLUSION

9.1 ICT as an educational tool offers much potential to enhance and enrich the way in which children learn. Almost all children are motivated by and enjoy using ICT. In most schools, the use of ICT to enhance work across the curriculum is growing. There are many important strengths of the ICT provision in primary schools in NI. These include:

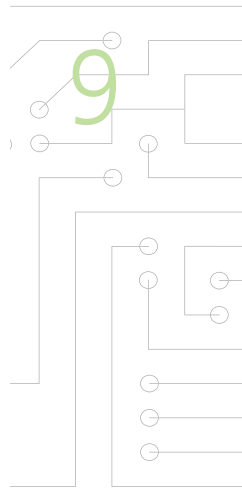
- a high priority given to the development of ICT in most schools;
- the satisfactory or good quality of teaching using ICT in around 80% of the lessons inspected;
- an increasingly effective use of ICT to support whole-class teaching;
- the sound ICT skills developed by the majority of the children;
- the growing number of teachers making good use of ICT to improve lesson planning and preparation;
- the improved understanding by the majority of teachers who have completed NOF training and other ICT-related INSET of when, when not and how to use ICT;
- the high levels of satisfaction reported by most of the schools which have the C2k managed service solution implemented.

9.2 The report indicates that while there has been real progress in the development of ICT in primary schools, much remains to be done in the context of using ICT to enhance classroom practice across the year groups. The inspection has identified a number of areas for improvement, and in order to strengthen the quality of ICT provision and raise the standards achieved for the children, there is a need for:

- further integration of ICT to support work across the curriculum;
- improved breadth, balance and variety in the range of ICT experiences for the children, including more opportunities for them to use ICT creatively and in problem-solving activities;
- principals and members of school management teams to articulate and support effectively a clear strategy for the development of ICT across the curriculum and to ensure that all the children have consistent and broader ICT experiences;
- further development of the assessment and recording of the children's achievements in ICT;

- better and more frequent use of ICT in the development of the children's literacy and numeracy skills and in supporting children with special educational needs;
- more strategic and coherent approach by CASS for the provision of ICT support;
- more effective and regular monitoring and evaluation by school managers of the children's progress and achievements in ICT.

9.3 This report confirms that many teachers have demonstrated high levels of commitment to improving their competence and confidence in ICT; in addition, they have worked hard to incorporate ICT into their teaching in order to enhance the children's experiences across the curriculum. There is a growing pool of teacher expertise in the effective and innovative use of ICT. A much wider range of suitable resources for ICT is becoming available and a firm foundation for future work in ICT has been established. Much has been achieved to ensure that children leaving primary schools in NI will have the necessary ICT skills to cope with an increasingly information-based society and to support their work in post-primary education.





## APPENDIX 1

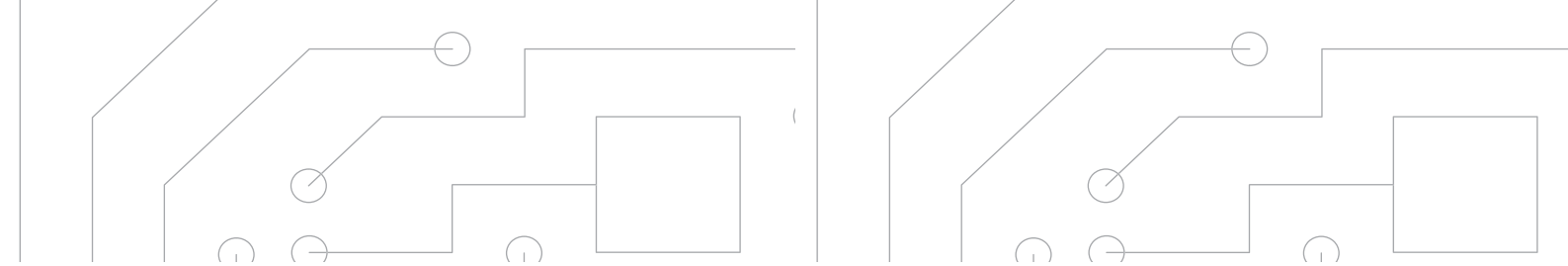
### SCHOOLS INVOLVED IN THE INSPECTION

- Acorn Integrated Primary School, Carrickfergus
- Annaghmore Primary School, Portadown
- Ballydown Primary School, Banbridge
- Ballymena Primary School
- Ballyrock Primary School, Bushmills
- Blackmountain Primary School, Belfast
- Cairnshill Primary School, Belfast
- Carrickmannon Primary School, Newtownards
- Derryhale Primary School, Portadown
- Donaghadee Primary School
- Dunclug Primary School, Ballymena
- Lambeg Primary School, Lisburn
- Lurgan Model Primary School
- McClintock Primary School, Omagh
- Mountnorris Primary School, Armagh
- Nettlefield Primary School, Belfast
- Sion Mills Primary School
- Springfield Primary School, Belfast
- St Colman's Primary School, Lambeg
- St Dallan's Primary School, Warrenpoint
- St John's Primary School, Londonderry

- 
- St Joseph's Primary School, Bessbrook
  - St Mary's Primary School, Kircubbin
  - St Oliver Plunkett Primary School, Belfast
  - St Patrick's Primary School, Burrenreagh
  - St Patrick's Primary School, Castleterg
  - St Patrick's Primary School, Rasharkin
  - St Peter's Primary School, Belfast
  - Star of the Sea Girls' Primary School, Belfast
  - Strathearn School, Preparatory Department, Belfast
  - Suffolk Primary School, Belfast
  - Sydenham Infants Primary School, Belfast

### GLOSSARY OF TERMS

<b>Broadband</b>	Describes the speed of network connectivity and services. Connection speed is measured in Kbps (kilobits per second) and Mbps (megabits per second). For example, all post-primary schools in NI have a broadband 2 Mbps connection to Internet services. At the moment, connection speeds above 384 Kbps are regarded as broadband. Connection speeds below this are called narrowband.
<b>C2k</b>	An ICT managed service, providing infrastructure, wide area network integration, curriculum content and user support to all primary, post-primary and special schools in NI.
<b>Data projector</b>	Allows an image that would normally be displayed on the computer screen to be projected onto a larger screen, for example, for presentation to a whole class.
<b>Desktop publishing</b>	The process of creating publications and documents using software with good graphics capability. Desktop publishing software allows images to be included with text and to be moved around in blocks, placed into columns and so on. The software is often used by children to create and present leaflets, newspapers and brochures.
<b>E-mail</b>	Involves the sending and receiving of messages electronically normally using the Internet.
<b>Internet</b>	A worldwide 'network of networks' connecting millions of computers using telephone and cable communication links.
<b>Internet Acceptable Use Policy</b>	Every school must create an acceptable use policy document outlining the ways in which the computers and the Internet can or cannot be used. Children and their parents or guardians are required to sign this document.



### Interactive (electronic) whiteboard

An interactive screen linked to a computer, based on the design of a standard whiteboard. The computer image is projected onto the screen, normally using a standard data projector and has touch-screen control. Teachers and children have control over the computer by touching a pointer to the screen and can interact with a presentation or website in front of the whole class.

### Intranet

A school intranet is a method of sharing information and resources in the form of a website, restricted to approved users within the school. The information is held locally on the school network and the users access the intranet through a web browser. Most intranets enable users to connect to the Internet.

### IT in the Northern Ireland Curriculum

There are four strands of IT competence in the Northern Ireland Curriculum. These are:

- Communication;
- Information Handling;
- Modelling; and
- Measurement and Control.

Children are assessed against level descriptions for each of the four strands of IT competence. The level descriptions describe the types and range of performance that children working at each level should demonstrate.

### Managed service

A service which will supply networked computers, software content, connectivity to the Internet, e-mail and links to range of other wide area services. The service is supplied, installed and maintained by a service provider from the private sector. The managed service in NI schools is being procured through C2k.



## APPENDICES

### Network

A network connects computers together and enables the sharing of software and peripheral devices such as printers and access to the Internet. Computers within the same school are normally connected to a Local Area Network (LAN), and the networks from different schools could be connected to become a Wide Area Network (WAN).

### PC

Personal computer.

### Search engine

An Internet tool that helps the user to find web pages using a keyword search.

### Software

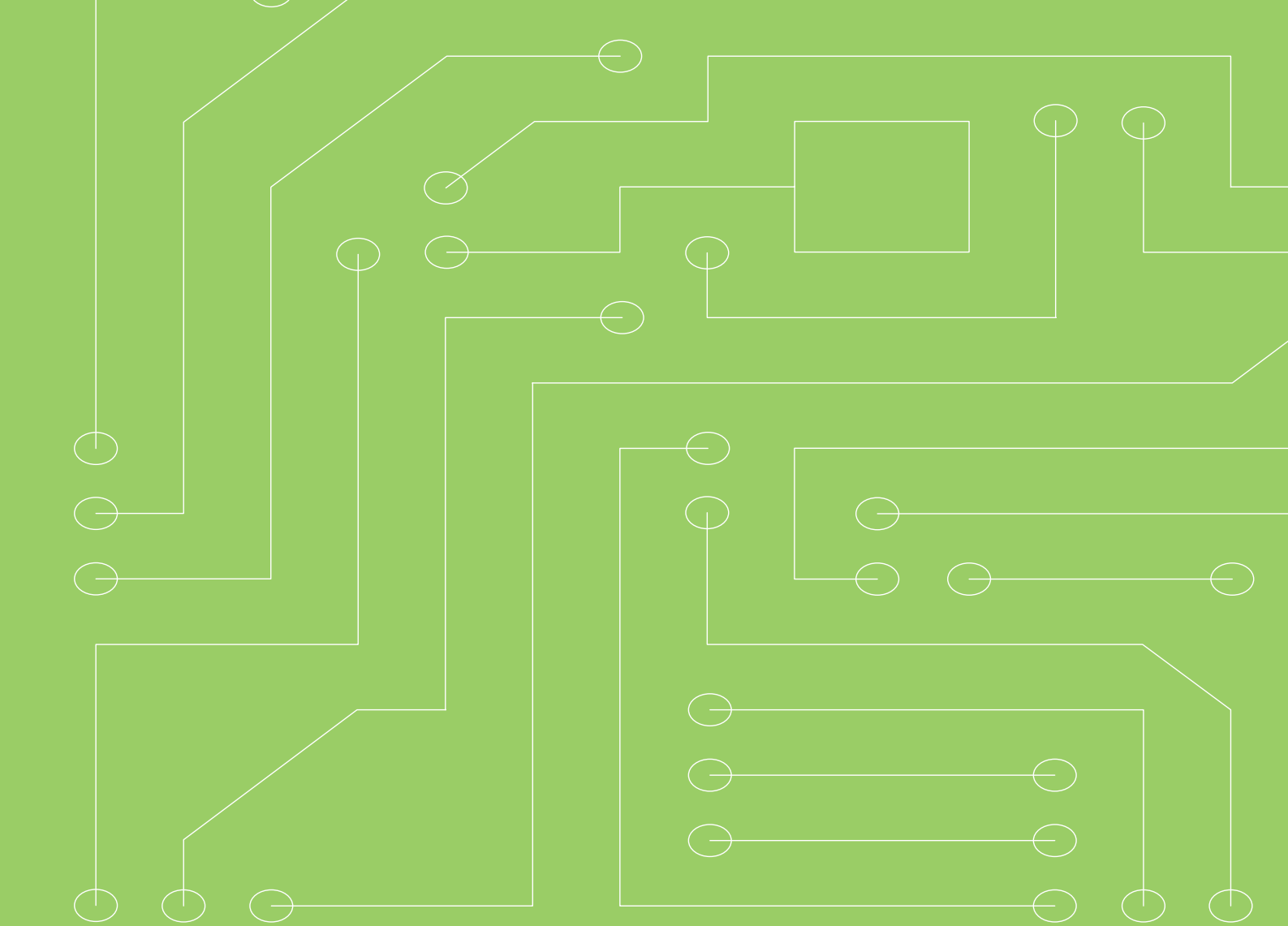
The applications (or programs) which run on computers, for example, databases, spreadsheets and word-processors.

### Videoconferencing

A form of electronic communication that enables groups of children, situated at different locations, to communicate. They are able to see and talk with one another.

### Web browser

A software application that locates and displays web pages. The two most popular browsers are Microsoft Internet Explorer and Netscape Navigator.



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