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An Evaluation by the Education and Training Inspectorate

Information and Communication Technology in Primary Schools

May 2005

CONTENTS

1.   INTRODUCTION

The last eight years have seen considerable developments in information and communication technology (ICT) in primary schools in Northern Ireland (NI). The Strategy for Education Technology (ET Strategy) in NI was launched in September 1997, resulting in significant investment in ICT in schools.

In 2002, after five years, the Education Technology Strategy Management Group for the Department of Education (DE) reviewed the achievements of the ET Strategy. The full report can be viewed online at http://www.class-ni.org.uk/etstrategy/etstrat/index.htm. The review indicated that over 85% of the strategy's targets for change in schools was in the process of being achieved by the end of the academic year 2002/03.

An inspection survey report by the Education and Training Inspectorate (Inspectorate) on ICT in primary schools was published in 2002, and provides an evaluation of ICT prior to the roll-out of the Classroom 2000 (C2k) managed service system. The inspection survey noted many important strengths in the ICT provision in primary schools in NI at that time. These included:

❒   the 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;

❒   the 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 the New Opportunities Fund (NOF) training and other ICT-related in-service training (INSET) of when and how to use ICT; and

❒   the high levels of satisfaction reported by most of the schools which had the C2k managed service solution implemented.

The report recognised the progress in the development of ICT in primary schools, and identified a number of areas for improvement. These included the need for:

- ❐ the further integration of ICT to support learning and teaching across the curriculum;

- ❐ the improved breadth, balance and variety in the range of ICT experiences provided 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 have, and to support effectively, a clear strategy for the development of ICT across the curriculum, and to ensure that all of the children have consistent and broader ICT experiences;

- ❐ the 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 (SEN);

- ❐ a more strategic and coherent approach by Curriculum Advisory and Support Service (CASS) for the provision of ICT support; and

- ❐ more effective and regular monitoring and evaluation by the school of the children's progress and achievements in ICT.

The emPowering Schools strategy builds on the foundation laid by the ET strategy. The Department of Education set out this strategy in 2003 to run for five years; it seeks to build the capacity needed to use the technology well, bring about systemic changes which embed ICT into practice, evaluate the educational benefits, quality assure the integration and make progress towards a unified e-learning strategy. Milestones have been established which provide a framework for the action-planning which needs to be undertaken.

An important development in the strategy is LearningNI, a managed learning environment. LearningNI, a wide area network (WAN) e-learning environment, is available to schools in NI. LearningNI aims to influence and will drive e-learning development in NI's schools over the next five years and beyond. The LearningNI on-line environment offers a flexible, feature-rich platform and encourages and facilitates the development of teaching communities that can be used to share resources. It will provide access to learning resources both inside and outside the school environment, streaming video and high speed video-conferencing, and enable schools, libraries and local communities to collaborate on developing joint learning programmes.

This report is a follow-up to the Inspectorate report published in 2002, and is a summary of the findings of an inspection survey of the provision for ICT in supporting and enhancing learning and teaching in a sample of primary schools in NI. The inspection survey was carried out by the Inspectorate during May 2005. The objectives of the inspection survey were to evaluate:

     i. the quality of learning and teaching using ICT;

    ii. the quality of planning in schools for the development of ICT; and

    iii. the quality of the resources available to support the development and enrichment of the children's experiences using ICT.

The findings are based on evidence from the inspection of 26 primary schools (Appendix 1). The inspectors observed approximately 350 lessons in the sample schools across key stage (KS) 1 and KS2. Discussions were held with principals, members of school management teams, ICT co-ordinators, teachers and children. In addition, the inspectors examined samples of children's work, teachers' planning, School Development Plans, ICT policies, schemes of work and any other documentation, provided by the schools, which was relevant to the inspection survey. The inspectors also identified instances of good practice in the effective use of ICT in learning and teaching; examples of these have been included in the report. The Inspectorate comments on the provision for ICT in supporting and enhancing learning and teaching in all primary school focused inspections. The conclusions regarding ICT from the 68 focused inspections carried out during the academic year 2004/05 support this inspection survey's findings.

Prior to the inspection, the management teams of over 950 primary schools in NI were invited to complete an on-line self-evaluation questionnaire in order to provide the Inspectorate with information on the provision for ICT. Almost 40% of schools responded to the request and a detailed database was compiled from the information received.

A number of quantitative terms is 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%

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

Grade

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

2. SUMMARY OF MAIN FINDINGS

❒ In approximately 70% of the schools inspected, the quality of planning for ICT is satisfactory or better. In nearly one-half of the schools, there is comprehensive and detailed teachers' planning to guide the work in ICT and there is a shared understanding among the staff of the purpose of ICT to support learning and teaching.

❒ In a majority of the lessons observed, the quality of the teaching is very good and incorporates effectively a wide range of ICT applications.

❒ The range and quality of the children's experiences using ICT are judged to be satisfactory or better in over 75% of the schools visited.

❒ Word-processing is the most commonly used application of ICT in most schools.

❒ In most schools the use of electronic communication, creation and maintenance of websites, video-conferencing, control and modelling are all under-developed and under-used.

❒ Trends of usage in primary schools indicate an increasing and more regular use by the children of multi-media and database software, and of Internet searches.

❒ In approximately 50% of the schools, assessment of children's work using ICT is weak. In these schools, there is little evidence of a systematic process for monitoring, recording and evaluating the children's achievements and learning using ICT.

❒ In almost all of the schools visited, the development of ICT is one of the priorities in the School Development Plan.

❒ In just over one-third of the schools, there is a lack of any coherent vision or understanding at a senior level about the potential of ICT to enhance the children's learning experiences.

❏ Good progress has been made in the level of ICT competences in almost all schools since the last ICT inspection survey in 2002; the majority of children are developing increasingly sophisticated skills in the use of ICT.

❏ Children respond to ICT in a positive way and are motivated by ICT-related activities. In a majority of schools, the children have high levels of interest and enthusiasm in their work in ICT; they are motivated by the inclusion of ICT in their lessons.

❏ In almost one-third of the schools visited, the staff development programme is not sufficiently focused on the use of ICT to enhance learning, and monitoring and evaluation of progress are ineffective.

❏ In a majority of the lessons observed, the quality of the learning and teaching was satisfactory or better, significant differences were observed, however, between the provision in ICT in KS1 and KS2. The quality of the learning and teaching was judged to be very good to excellent in almost one-half of the lessons seen in KS2, and in just less than one-quarter of those in KS1.

❏ The use of the digital camera has increased since the last inspection survey and in a significant minority of schools, the children make use of it to record class activities and school events. In the best practice seen involving the use of the digital camera, digital images were used effectively to stimulate discussion and promote language development.

3.   TEACHERS' PLANNING FOR ICT

3.1   In approximately 70% of the schools inspected, the quality of planning for ICT is satisfactory or better. By contrast, in approximately 30% of the schools, the quality is less than satisfactory.

Teachers' Planning for ICT - Figure 1
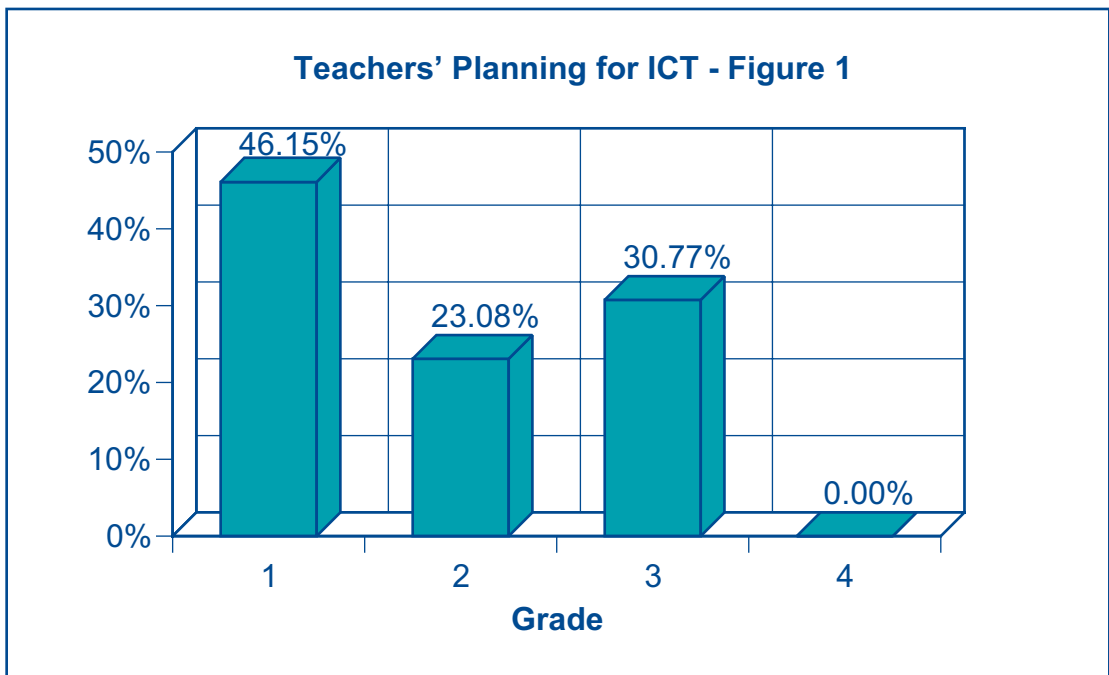
3.2 FEATURES OF BEST PRACTICE

In the best practice, in almost 50% of the schools, there is a shared understanding among the staff of the purpose of ICT to support learning and teaching; there is an overall ICT policy, action plans, and planning which outlines progression in, and an overview of, the children's work in ICT. The planning for ICT is comprehensive and its development is a priority in the School Development Plan.

In these schools, there is a whole-school approach to planning and, often, teachers' planning is shared and disseminated on the school Intranet. The ICT co-ordinators demonstrate good management of the school intranet to promote the sharing of ICT resources and samples of the children's work. They provide strong leadership, and their help and guidance to the teachers in the area of development of whole-school planning promote effectively the use of ICT to support learning and teaching.

The teachers are developing greater confidence and competence to plan for the use of ICT using a wide range of appropriate C2k programs and classroom organisational strategies. They have a good knowledge of the nature and scope of the available resources and have identified effectively the opportunities to integrate

and utilise ICT to support work in most curriculum areas, often sharing the intended learning outcomes with the children at the start of lessons.

The Principal and the co-ordinators monitor the planning effectively, usually through use of the Intranet. The teachers evaluate regularly the planning for learning, and write comprehensive evaluations.

Where there is detailed planning for curriculum areas, which identifies consistently resources, including ICT software and cross-curricular links, there is a sound basis for the development of a helpful assessment process. In most of these schools, effective use is made of the CASS of each Education and Library Board's (ELB's) guidance to help identify appropriate software titles for each year group, as well as guidance to ensure continuity and progression in using ICT.

In a majority of schools, ICT is used by most teachers to enhance the quality of the presentation of their own planning as well as to prepare learning materials and to enrich the presentation and content of school displays and the children's project and topic work.

> *We made a bid for Dissemination of Good Practice funding for two years, receiving £10,000 each year. We used the money in the first year to focus on KS2, with particular emphasis on the teachers' and pupils' abilities to use PowerPoint, the interactive whiteboard (IWB) and camcorders to enhance learning and teaching. The main emphasis for children was on their ability to communicate their learning using appropriate digital and on-line technologies. We used the funding to release a KS2 teacher, who had a particularly high level of ICT competency, to team-teach with each colleague over a six-week period. This teacher also provided two INSET sessions on the use of the IWB and PowerPoint and assisted teachers in planning ICT provision in their units of work. Key elements of success were the quality planning time for teachers, the collegial approach to planning, teaching and evaluation and the involvement of children in setting their own targets and evaluating their own learning.*

3.3 FEATURES OF LESS EFFECTIVE PRACTICE

In approximately one-third of the schools visited, there are weaknesses in the teachers' planning for the use of ICT. The planning is limited and reflects a fragmented approach to the use of ICT as an effective tool for learning. It consists solely of the identification of the C2k programs to be used and makes no reference to how ICT is to be used or managed to promote learning. It refers to the type and content of the programs, and does not identify appropriately the learning potential for the children. Moreover, there is little or no provision in the planning for the assessment of the children's responses to ICT, nor evaluations by the teachers of the effectiveness of the software. As a result, the outcomes of the children's use of ICT and the impact on, and progression in, their learning is rarely measured or monitored.

4. LEARNING AND TEACHING

4.1   In a majority of the lessons observed, the quality of the learning and teaching is satisfactory or better. Significant differences, however, were observed between the provision in ICT in KS1 and KS2. The quality of the learning and teaching is very good to excellent in almost one-half of the lessons seen in KS2, and in just less than one-quarter of those in KS1.

% Lessons KS1 - Figure 2

% Lessons KS2 - Figure 3

Grade	%
1	46
2	44
3	9
4	1
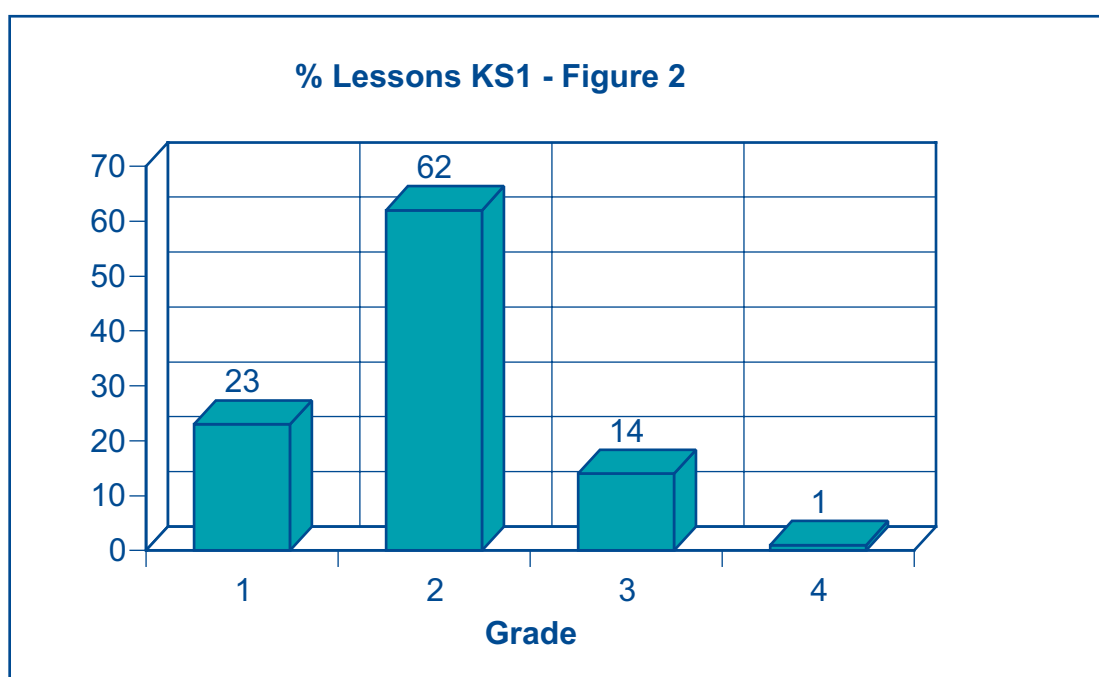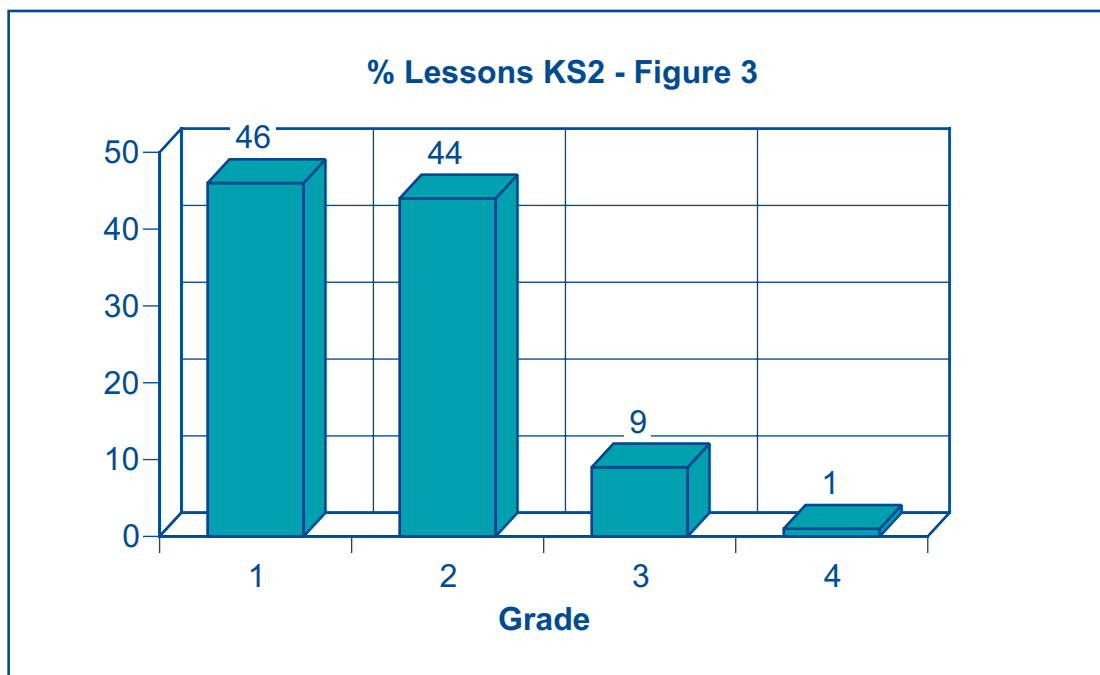
4.2 FEATURES OF BEST PRACTICE

In the best practice, the teachers are aware of the importance of the appropriate use of ICT to support their teaching and to enhance the children's learning. They are enthusiastic about incorporating the use of ICT to support and stimulate effectively the children's interest in learning. High levels of teacher enthusiasm, coupled with challenging and stimulating tasks, promote the children's interest and extend their thinking.

The children show high levels of confidence in their work using ICT and respond with enthusiasm and enjoyment. They are motivated by the effective inclusion of ICT in lessons, and their attitudes to learning in these lessons are very positive.

Where the practice is very good, the teachers use a range of good classroom organisational and management skills to enable all the children to acquire competence in the use of ICT hardware and software and to develop a range of ICT skills. Information and communication technology is used well through whole-class, group, paired and individual work to promote independent learning and to extend the children's understanding, especially those children with special educational needs.

The IWB was used very effectively in a year 1 class. The teacher was consolidating the children's understanding of initial sounds and reinforcing their knowledge of upper and lower case letters. The programme she devised was linked imaginatively to a topic on 'The Jungle'. The children manipulated graphics on screen and then joined linking lines to match upper and lower case letters. The lesson lasted approximately 40 minutes and the children, especially the boys, were engaged throughout; they responded to the moving stimuli and enjoyed recording their own efforts on screen. The teacher's excellent management of the learning, together with the attraction of the IWB, resulted in an outstanding lesson.

4.3   Effective use is made by a majority of schools of a data projector linked to a computer or laptop for whole-class demonstrations and presentations on a range of topics. Increasingly, though still in only a minority of schools, IWBs are providing a dimension of learning support for the teacher and the children that supersedes the computer monitor, textbook and the worksheet in terms of their levels of interest and engagement and the good opportunities presented for interactive team work. There are often good opportunities to solve problems within small group and whole-class situations by discussing and exploring a variety of solutions; the effective use of this technology is providing the children with instant feedback on their performance.

In a year 5 class, the teacher introduced a science lesson using a PowerPoint presentation about sources of energy. One group of children carried out a practical investigation, using a variety of surfaces, to determine differences in how high a ball can bounce. The group used the web cam to record the bouncing ball against a measure chart. They replayed the record and used the 'freeze frame' facility to get an accurate measurement of the height of the ball at the top of its trajectory.

4.4 FEATURES OF LESS EFFECTIVE PRACTICE

Where the use of ICT is under-developed, the majority of the teachers are working in isolation and a strategic whole-school approach to ICT is absent at all levels. The teachers are at an early stage in the use of the C2k curriculum materials.

There is an urgent need for focused staff development to encourage and support teachers to use the wide range of available software tools and ICT equipment more effectively to provide a more coherent and broader range of ICT experiences for the children.

The children's experiences lack real challenge, with some teachers providing mundane, task-orientated activities and few opportunities for the children to develop initiative or independence. The children's ICT experiences are limited to the use of C2k programs to reinforce knowledge and skills. The potential of ICT to promote the children's creativity and problem-solving skills is under-developed and insufficient use is made of ICT to enhance and enliven whole-class teaching.

By the time the children reach year 7, they are generally competent in the use of a range of applications, although insufficient use is made of ICT to extend the learning experience and challenge for the advanced learners, and to provide the support and consolidation necessary for those whose progress is less secure.

5.   RANGE AND QUALITY OF CHILDREN'S EXPERIENCES USING ICT

5.1   The range and quality of the children's experiences using ICT are satisfactory or better in over 75% of the schools visited. In approximately 25% of the schools, the children's experiences of using ICT are narrow.

Range and Quality of the Children's Experiences using ICT - Figure 4

Grade	Percentage
1	30.77%
2	46.15%
3	23.08%
4	0.00%
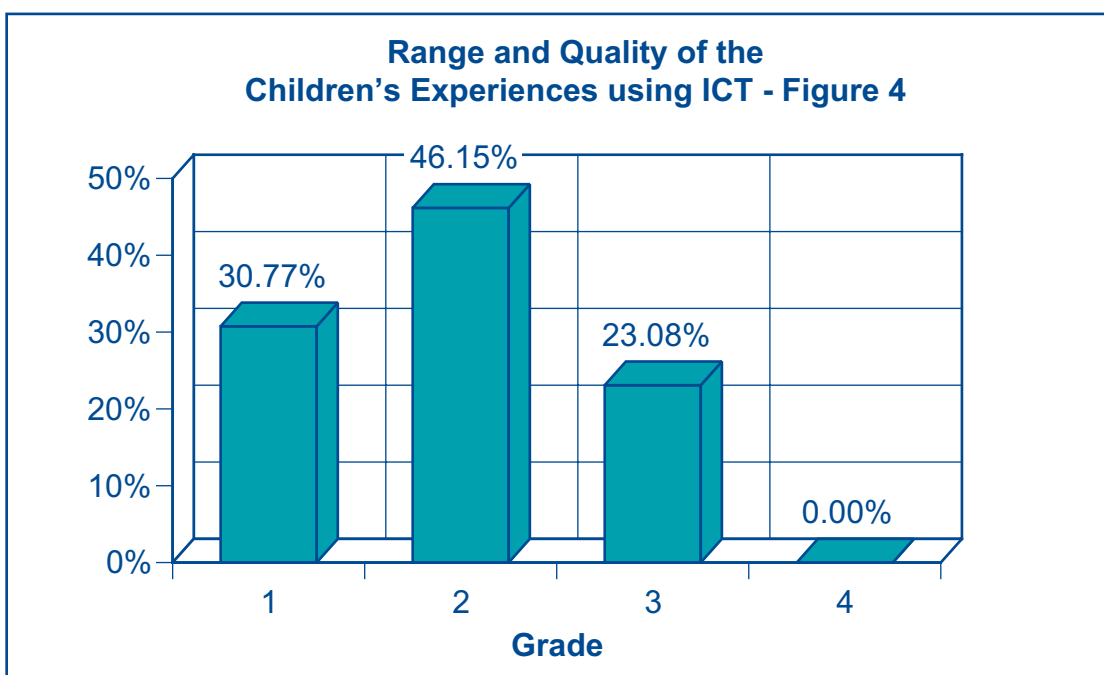
5.2 FEATURES OF BEST PRACTICE

Where the range and quality of the children's experiences are judged to be very good, in just under one-third of the schools visited, the children demonstrate high levels of confidence, skill, understanding, independence and enjoyment in their learning involving ICT, and show initiative and flexibility in their use of ICT applications.

Almost all children respond to ICT in a positive way and are motivated by the inclusion of ICT-related activities during lessons; they are particularly motivated by the whole-class aspect of ICT in learning and teaching, where, for example, a data projector or an IWB is used, leading to good discussion and high levels of engagement. In a small number of the schools, the children take ownership of ICT initiatives, such as up-dating the scrolling display in the school foyer, or older children mentoring younger classes in the use of ICT. Children's involvement and interest are promoted where there is good integration of experiences using ICT into real learning situations and where use is made of the local area.

Where there is a whole-school culture of using ICT to enhance the children's learning across the curriculum, there are many examples of the thoughtful use of applications where the children's ICT experiences are planned and are appropriately challenging.

5.3 FEATURES OF LESS EFFECTIVE PRACTICE

In just under one-quarter of schools visited, the ICT experiences of the children across the school are poor and many opportunities for the use of ICT to support and enrich curriculum work are missed. In these schools, there is a lack of awareness by the Principal and almost all the teachers of the potential of ICT to enliven teaching and enhance learning. ICT is not seen as a priority by the Principal, it is not identified as an area for development on the School Development Plan, and the teachers have had little or no professional debate or development with regard to ICT. Allied to this, co-ordination is weak, leading to experiences for the children which are low-level, unstimulating and inadequate. At KS1, the children sometimes use C2k software for reinforcement and consolidation work, although this is not well-linked or mapped into ongoing work. There is little evidence of the use of ICT in creative, investigative or problem-solving activities. These schools provide a narrow range of learning experiences using ICT and there is little evidence of the children developing as independent users of ICT.

5.4 Experiences: *(based on the findings from the inspection survey school visits and from the responses to the on-line questionnaire).*

In a majority of classes in the early years, children experience some word-processing tasks, art packages and simulations. In play-based sessions, the younger children engage with ICT software programs that help them to learn about number, colour, shape, sorting and matching.

> *In a lesson in year 1 and 2 class, the teacher used concept keyboard overlays to enhance the children's understanding of the life cycle of a chick. The children discussed the pictures in the cycle, put them in sequence and then printed the result. When used with the older children, the cycle was in text only and the children worked in pairs to agree the sequence. The teacher assisted the children in importing appropriate graphics onto the page and the result was printed.*

Word-processing continues to be the most common activity in which ICT is used. At KS1 in the majority of schools, children compose short stories and poems using Writer, Textease or Clicker 4; they improve the appearance of text by using the word-processing tools and by inserting relevant images. In addition, they make use of art packages to create images appropriate to enhance ongoing curriculum work and for incorporation into word-processed text. They use graphing software to draw pictograms, for example, to represent familiar data, identify mathematical patterns and in some instances to analyse and comment meaningfully on the patterns. By the end of KS1, children often compose and edit their work on screen; by the end of KS2, in the best practice, children are writing at length for a range of purposes and for a range of audiences, for example, creating sophisticated multi-media presentations incorporating imported graphics and digital images.

Increasingly, schools are making substantial investments in IWBs. Effective use of the IWB in a whole-class context enhances children's acquisition of ICT skills, although this activity is also carried out effectively in classrooms through the use of a computer and a data projector. When teachers use the functionality of the IWB effectively to make learning more active, children use the board confidently and make suggestions about further use.

In most schools, the elements of data-handling, control and modelling continue to be under-developed. In approximately one-quarter of the schools, the children have regular opportunities to use Logo and programmable devices, such as floor turtles, to work collaboratively to solve problems and to learn about control, sequencing and estimation. The Roamer floor turtle is used to some extent in KS1; its potential for learning, however, is not exploited sufficiently in a coherent and progressive manner.

In a majority of schools, the digital camera is used well to enhance the learning environment throughout the school. Teachers make sound use of it to create visual records of the children's learning activities, experiments and achievements. In a significant minority of schools, the children make use of the digital camera to record school events. In the best practice seen, digital images are used effectively to stimulate discussion and to promote language development.

The year 7 children were working on making an animated film, using a very sophisticated digital camera and editing software. This project involved creative writing using storyboarding and art and design in making the model characters. The outcome was outstanding! The engagement of the children, the quality of the models, the skills demonstrated in the care and craft involved in setting up the equipment and evaluating the previous day's work and the team work demonstrated by the children were exceptional! This work was part of an ongoing project; the following day the children were visiting the Queen's Film Theatre to see other work on animations and to see a 'working' cinema environment. The children intended that their own efforts could be shown on the 'big screen' as part of the visit.

In almost one-third of all schools, the children have frequent opportunities to develop research skills through regular access to on-line information and resources. By the end of KS2, most of the children in these schools are skilled in researching, interpreting, retrieving, refining and adapting information. They select and evaluate information from a range of sources, including the Internet, and use the information to enhance their understanding in other subjects. They use appropriate software to manipulate, search and sort data and to edit and present their work.

When possible, teachers link ICT activities to relevant contexts and there are many good opportunities and experiences provided through the use of ICT to support the children's knowledge and interest in their local environment and the wider world.

The use of packages to present information, such as PowerPoint and Textease, is increasing. In about 10% of schools, the children, mainly in KS2, have frequent opportunities to design and create effective multi-media presentations relevant to curriculum work and, in some instances, to present these effectively to their peers and to a range of different audiences.

> *As part of a class project, a year 7 child had saved three web pages of detailed text. He then used a pen to highlight what he deemed to be the five most important sentences in the passage. He explained his choice of sentences as being 'the most important information there was'. This demonstrates a good understanding of identifying and using important aspects of information.*

In less than one-quarter of schools, children in both key stages have regular opportunities to use database software to create, present, analyse and interpret data to support their work across the curriculum. They work collaboratively to enter information and to produce a range of outputs, for example, graphs, charts, reports, sorts, searches and queries. The children pose their own questions to interrogate and interpret the information meaningfully.

> *The children have excellent experiences through their involvement in film-making as part of a digital video project, which is high quality, creative work led by an expert and enthusiastic teacher. The work is cross-curricular in nature and develops the children's learning, for example, in art, science, the world around us, numeracy, and literacy. The children develop highly technical ICT capabilities, using hardware and software as tools to support their work: digital filming, importing and exporting data, video-editing, audio editing, multi-media presentations and Internet research. They develop effective research skills. There are excellent opportunities to enhance literacy skills, such as storyboarding, development of characters, script writing, oral presentation skills, team-working and awareness of audience.*
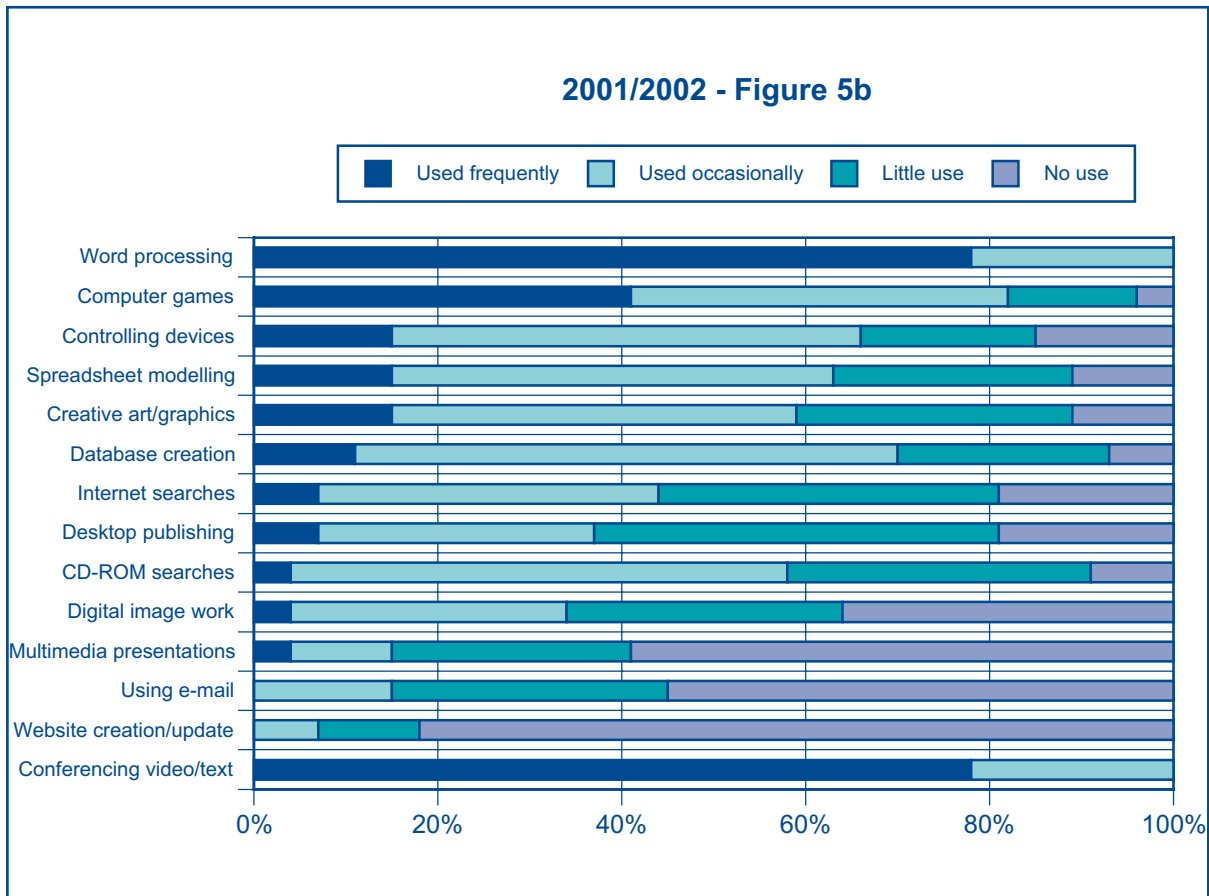
Software Used by Schools - 2004/2005

(Results are based on evidence from the inspection survey and from the responses to the on-line questionnaire.)

In most schools, the use of electronic communication such as e-mailing, creation and maintenance of websites and video-conferencing are all under-developed and under-used (Figure 5a below). Most schools recognise that word-processing predominates and that children have few, regular opportunities to control devices, use multi-media software and to communicate electronically.


2004/2005 - Figure 5a
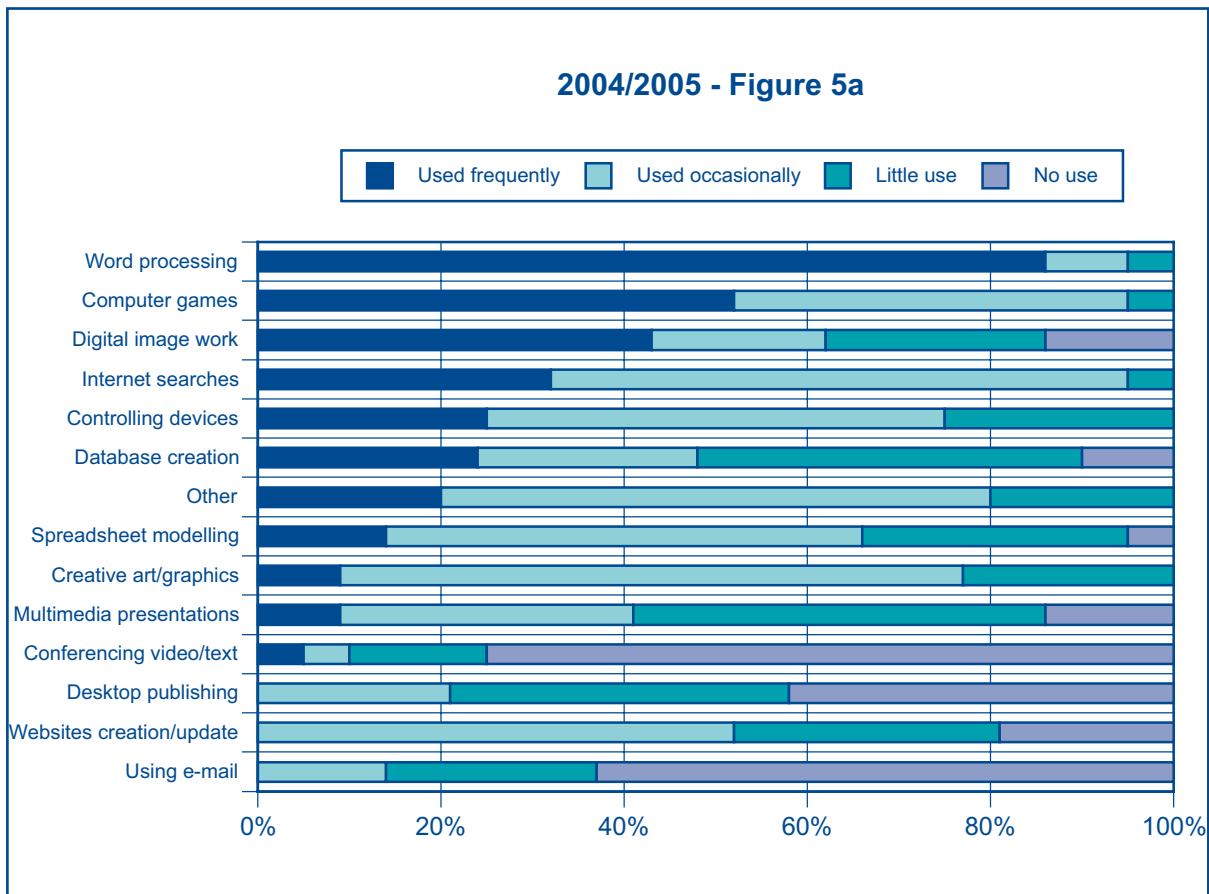
There has been a significant investment in ICT in primary schools in terms of infrastructure and staff development. The pattern of usage has not changed significantly in the three years since the last inspection survey report of 2002; word-processing is still the most used aspect of ICT. The children continue to have limited experience of, for example, creating and maintaining websites and

conferencing using video. However, trends of usage indicate an increasing and more regular use by the children of multi-media and database software, and Internet searches.

2001/2002 - Figure 5b

Legend: Used frequently · Used occasionally · Little use · No use

Categories (top to bottom):
- Word processing
- Computer games
- Controlling devices
- Spreadsheet modelling
- Creative art/graphics
- Database creation
- Internet searches
- Desktop publishing
- CD-ROM searches
- Digital image work
- Multimedia presentations
- Using e-mail
- Website creation/update
- Conferencing video/text

Axis: 0% · 20% · 40% · 60% · 80% · 100%

6.   ASSESSMENT OF ICT

6.1   The assessment of children's achievements and competence in using ICT is very good or better in only around 50% of the schools inspected. In the other 50% of schools, assessment is weak.

Assessment - Figure 6
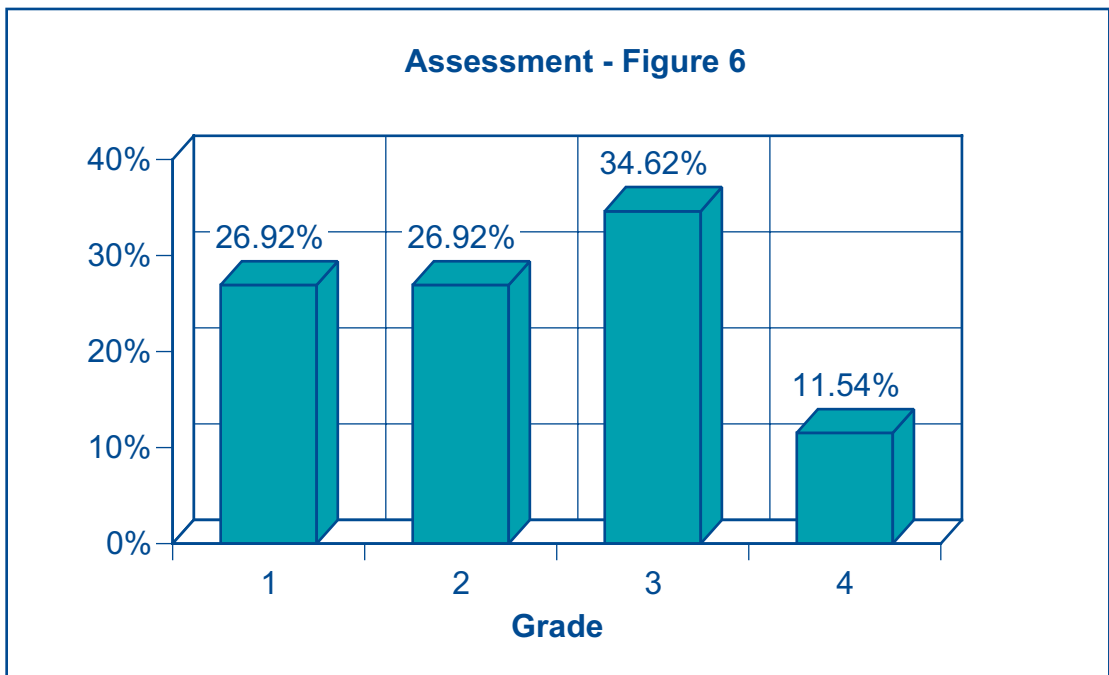
6.2 FEATURES OF BEST PRACTICE

In one-quarter of schools, assessment is very good to excellent. In this best practice, there is ongoing and systematic assessment through practical observation of the children's work, and well-documented records of the children's progress in using ICT are maintained. The teachers monitor and track the children's progress in ICT and use the information to inform future planning. Examples of the children's work using ICT are collated to form digital, multi-media, electronic portfolios of ICT competence. In a number of instances, the children are involved in this process. Records of achievement provide comprehensive records of progress and achievements in using ICT. In these schools, the impact of ICT is monitored and evaluated effectively by both the teachers and the management team.

The school is in its second year of the Council for Curriculum, Examinations and Assessment (CCEA) KS2 Accreditation Scheme. Samples of ICT work are maintained for each child throughout the school, building up a comprehensive portfolio of experiences.

6.3 FEATURES OF LESS EFFECTIVE PRACTICE

In approximately one-third of the schools inspected, ICT is not strongly nor consistently integrated into the teacher's planning. As a result, it is difficult for the teachers to assess, monitor and evaluate the children's work in ICT on a systematic basis. In a small number of the schools some samples of the children's work are collected which outline the technical skills the children have developed across each year. There is, however, no evidence of this assessment being used to inform future direction or action planning, or that the schools are building up a sound picture of the contribution ICT has made to the children's learning. In a minority of the schools, no formal records of the children's use of ICT are kept and no mention is made of their competence in ICT in their annual school report.

7. MANAGEMENT AND LEADERSHIP OF ICT

7.1 In almost all of the schools visited, the development of ICT is identified as one of the key priorities in the School Development Plan. The quality of this strategic planning varies significantly. The management and leadership of ICT ranges from very good to excellent in 38% of the schools in the inspection survey to less than satisfactory in just over one-third of the schools.

Management and Leadership of ICT - Figure 7
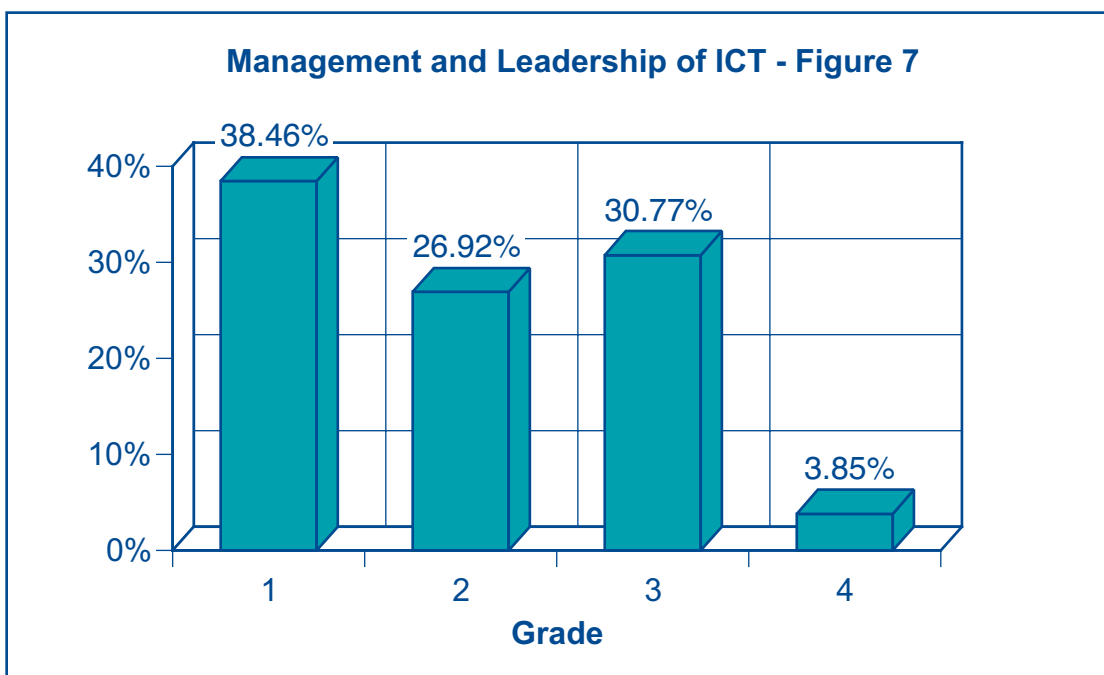
7.2 FEATURES OF BEST PRACTICE

The project started in December 2002 when the school decided to utilise the Intranet server space included as part of the C2k managed service. The ICT Core Team and the Senior Management Team thought this could be developed to support learning and teaching by developing the Intranet as a means to communicate and share knowledge and information throughout the school. The ICT co-ordinator used Macromedia Dreamweaver to create a template and the Intranet was launched. Initially the Intranet allowed access to an on-line Digital Diary where the staff could see what was happening in the school and also add their own entries which could be viewed by the whole staff. This feature was enhanced to include timetables such as PE, ICT room and music lessons.

In the best practice, the Principal has a clear vision of how ICT is to be developed throughout the school in a progressive, manageable manner, to broaden the children's experiences and to raise standards. A thorough, detailed and relevant School Development Plan for ICT identifies appropriate areas for improvement and development, supplemented with clearly-focused action plans.

In these schools, the Principal is committed to the development of ICT to support learning and teaching, and through interest and support, empowers staff by promoting a collegiate approach to making the best use of ICT resources. The teachers work well together to monitor and evaluate the children's experiences of using ICT, and, as a result, they have a clear picture of where, and what, ICT is happening in the curriculum.

The ICT co-ordinator provides on-line links to teaching resources such as websites and worksheets and organised these into key stage and subject area suitability; he added these to the existing site to allow staff single click access to resources recommended by colleagues; e.g. if a KS2 class was studying the Victorians, the class and teacher now had easier access to a range of websites and resources recommended by colleagues. This has reduced the need for teachers, on occasions, to create their own resources, and has led to a significant increase in the use of ICT within lessons.

The ICT co-ordinator provides effective leadership, advice and guidance and is encouraged and supported by the Principal and management team. ICT provision is monitored systematically and effectively through class visits, and by reviewing teachers' planning and scrutinizing samples of children's work.

The next step was to develop the space as a Digital Noticeboard which could host samples of work from all classes. Children could create a piece of work and have it posted on the Intranet for the rest of the school community to see immediately. This had positive effects on the motivation of the children.

7.3   FEATURES OF LESS EFFECTIVE PRACTICE

In just over one-third of the schools, there is a lack of any coherent vision or understanding about the real potential of ICT to enhance the children's learning experiences. There is an absence at the most senior management level of thinking and planning strategically for the integration of ICT in the school's provision. Often, in these schools, the School Development Plan is focused insufficiently on ICT, and there is little evidence of monitoring and evaluating of the children's progress. Reference made in whole-school guidance to ICT is mostly related to the maintenance of hardware or the identification of opportunities to use ICT, rather than a cogent integration of appropriate activities and independent work to enhance learning. As a result, much of the ICT provision remains at a relatively superficial level within these schools. The ICT co-ordinator has a limited vision of his/her role. S/he sees the role as a provider of information and support, but not as a curriculum leader. S/he has little idea of the extent to which ICT is used in classrooms.

8.   STAFF DEVELOPMENT IN ICT

8.1   In almost 70 % of schools visited, staff development in ICT is satisfactory or better. Almost all teachers have completed training in the use of ICT through the NOF training. Whilst there were issues concerning the timing of this training and its lack of synchronisation with the implementation of the C2k computers in schools, the training has served to stimulate higher levels of ICT competence among teachers, and has helped to raise the profile of ICT training, giving it a whole-school focus. In approximately one-third of the schools visited, staff development in ICT is less than satisfactory.

Staff Development - Figure 8
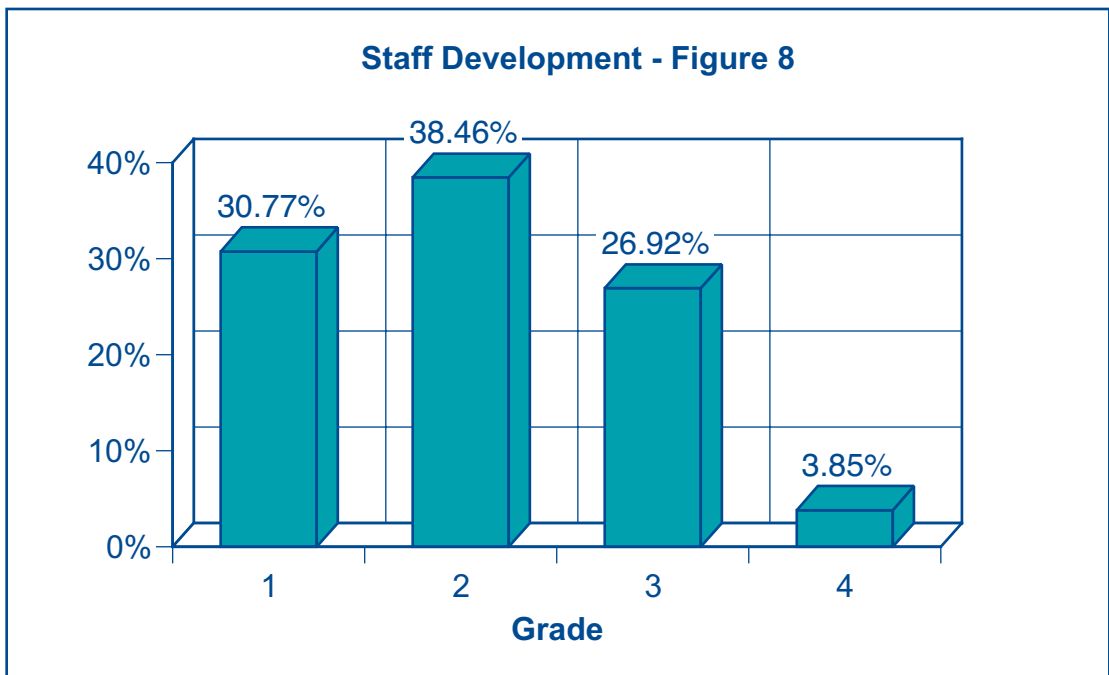
8.2 FEATURES OF BEST PRACTICE

In just under one-third of the schools visited, the Principal has a clear vision of how ICT is to be developed throughout the school. In these schools, the Principal is committed to the development of ICT to support learning and teaching. Monitoring processes, including peer observations, help to identify areas for staff development and for responding to new equipment such as IWBs, scanners, digital cameras and web cams. Detailed, relevant action plans for ICT, based on regular audits of staff needs, identify appropriate areas for development.

Often, it is the ICT co-ordinator who leads staff development in ICT. In the best practice, the staff development programme, led by a competent co-ordinator, is focused on improving ICT as a tool to support teaching and to enhance learning. The teachers are mutually supportive and a range of school-based and school-focused activities involve teachers working and learning together, and the good practice is disseminated effectively.

As participants in the 'Dissolving Boundaries' Project, our partner school is in Sligo. Regular contact on the videophone was the foundation of the project and the children used the videophone to get to know one another and to share information about where they live. Children shared personal and family backgrounds and studied differences in their neighbourhoods. The NINE conference site was used to send e-mail messages and to exchange work in progress. The main project involved citizenship work where the children had to create their own ideal island and to write a collaborative fantasy story. The children were highly motivated, and participated as a team to use the computer technology as a tool rather than as an end in itself. The process became more important than product.

In a small number of schools, initiatives such as the "Dissolving Boundaries" Project, the Northern Ireland Regional Training Unit (RTU) Leadership in ICT course and the Professional Qualification for Headship (PQH) have provided opportunities for whole-school staff development in ICT.

As part of a self-evaluative follow-up inspection, we looked at disseminating existing good practice. We purchased an interactive white board, a television, a DVD player and a palmcorder. We established an ICT suite that contained 14 computers. Our original intention was to keep this suite in operation only for the duration of the project. The Principal and KS2 co-ordinator provided technical assistance and monitored the ongoing work. At the evaluation stage we sourced opinions from all staff and pupils. The feedback was highly positive in all areas. The work produced was of an outstanding quality and the teachers reported that children were highly motivated and enthusiastically engaged in their learning. There was a universal demand from teachers to keep the ICT suite in operation and timetable classes in it throughout the year.

8.3 FEATURES OF LESS EFFECTIVE PRACTICE

In almost one-third of the schools visited, the staff have completed NOF training but since then, have not undertaken any other additional training associated with ICT.

The staff development programme in these schools is not focused sufficiently on the use of ICT to enhance learning, and the monitoring and evaluation of the children's progress is ineffective.

9. ACCOMMODATION, RESOURCES AND INFRASTRUCTURE

9.1   The accommodation and resources are very good in 35% of the schools visited, and satisfactory in 42%. In the remaining schools, the weaknesses in accommodation and resources outweigh the strengths.

Accommodation and Resources - Figure 9
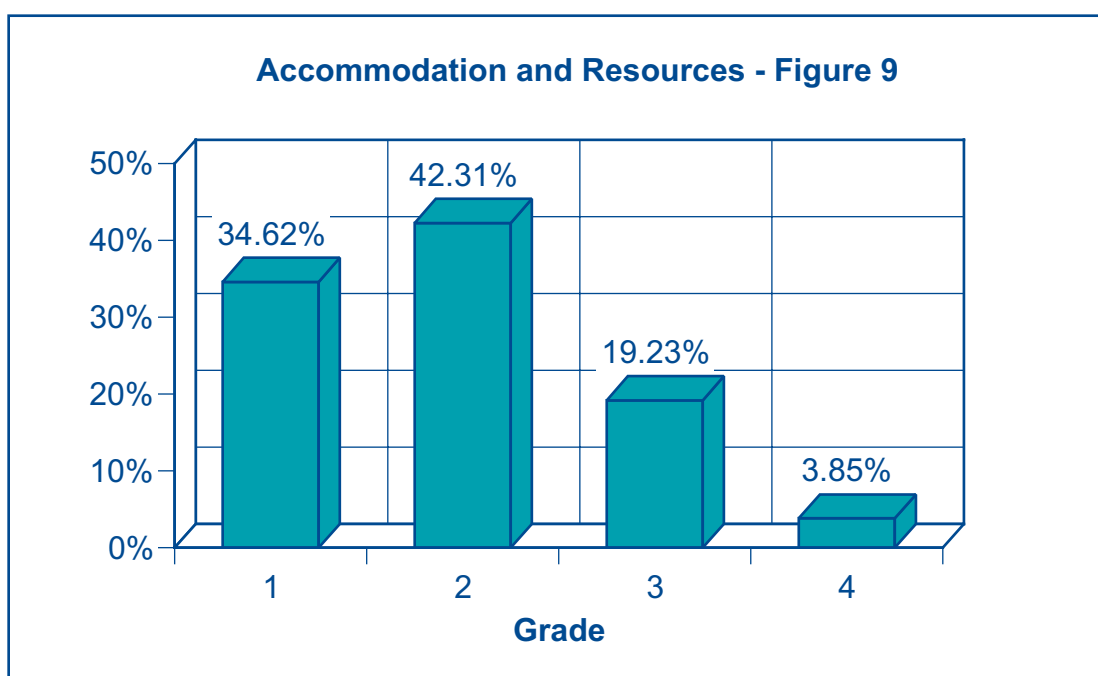
The issues around accommodation, in over 20% of the schools, are in relation to the difficulties involved in the cabling of mobile classrooms, in the absence of shared resource areas in older school buildings and also, in a small number of instances, in the inadequate or unsuitable benching, seating and lighting. The issues concerned with the resources centre mainly on the inappropriate location and dispersal of computers. Often, this has been due to insufficient thought being in relation to the siting of cabling and to the location of the computers in the classrooms.

Almost all schools have at least one digital camera, and these cameras are used very effectively to enhance displays of the children's work in the majority of schools. An increasing number of schools are acquiring IWBs; where schools have made a significant investment to purchase resources in addition to the C2k allocation of computers, this has been mainly for IWBs.

Almost all schools have allocated a small number of computers to each classroom; a majority have also opted to have small clusters of computers outside classrooms which can then be accessed by children from a number of different classes. Other schools, around 30%, have made use of computer suites for whole-class use. There is no evidence to suggest that one particular configuration of computers within a school is better than another; rather it is the effective use of the resources that is significant.

9.2   Based on the findings from the schools visited as part of the inspection survey, as well as the data from the 68 primary focused inspections carried out in 2004/05, the following aspects of the C2k managed service system are very positive and relate to:

- the reliability and efficiency of the equipment;

- the range and suitability of the software provided;

- the efficiency of the Internet band width; and

- the support and advice provided by C2k and SX3.

Less positive aspects of the managed service noted during the school visits and inspections relate to:

- the need for more printers;

- the difficulties surrounding the location of the networked printers;

- the cost involved in adding legacy equipment to the managed service;

- the time-consuming process of moving files between the local and the managed sides of the system; and

- difficulties using, for example, a memory pen with the system.

10. SCHOOLS' EVALUATIONS OF ICT PROVISION

Members of the management team within each primary school were invited to evaluate the provision for ICT within the school in the form of a self-evaluative on-line questionnaire prepared by the Inspectorate. The findings are summarised below.

C2k Managed Service

- The majority of schools are satisfied, or very satisfied, with the C2k managed service solution;

- 64% of the total number of computers used in the schools are part of the Viglen C2k allocation;

- around 40% of responses indicated significant strengths with the reliability of the equipment, the location of data points and the quality of the cabling solution;

- more than 50% of the schools claimed to be dissatisfied with the managed service catalogue;

- over half the schools indicated significant strengths with the Internet band width;

- a similar number judged the C2k Helpdesk to have significant strengths;

- around 30% of schools judge SIMS modules to be used well to support administration; a similar percentage judge the SIMS modules to have little use for this purpose;

❒   over 70% make little or no use of the SIMS Assessment and SENCO modules;

❒   almost half of the schools report that the C2k managed service has had a major impact on the quality of teachers' planning and on the quality of learning;

❒   approximately one-third report a major positive impact by the C2k managed service on the quality of teaching, on the children's literacy and numeracy skills and on the support for children with special educational needs; and

❒   just over one-third of schools stated that the range and quality of the software had significant strengths.

Support and Training

❒   More than half of the schools thought that support and advice provided by SX3 had significant strengths;

❒   28% of the responses cited the training offered by C2k to have significant strengths;

❒   almost one-half of the responses indicated that, when availed of, the advice and support offered by the CASS of the ELB were very good;

❒   nearly all schools report that the contribution of NOF ICT training has been significant to the school's development of ICT; and

❒   80% of schools have availed of post-NOF ICT training, about one-third of this training provided by the relevant ELB CASS.

Schools

- ❏ Almost all schools indicate some integration of ICT in the school development planning; in just over 50%, this integration is well-developed;

- ❏ almost one-third of schools report little or no monitoring of the children's experiences using ICT; just 10% report very close monitoring;

- ❏ 75% of schools report that they monitor, evaluate and disseminate the outcomes of any INSET in ICT closely or very closely;

- ❏ 60% claim to be very aware of the ICT competence of teachers;

- ❏ almost half of the schools enter children in the CCEA KS2 Scheme of IT Accreditation;

- ❏ approximately half of the schools claim to have a website; around 13% of these are hosted by C2k, a further 13% by the relevant ELB, and 74% by other sources;

- ❏ in just under 40% of the schools, the ICT facilities are available during out-of-school hours for the children's use; 13% of the schools facilitate community use of the ICT equipment after school; and

- ❏ around 33% of all the schools report very good use is made of ICT to support and enhance learning across the primary curriculum.

11. RECOMMENDATIONS AND CONCLUSION

Since the last inspection survey report of 2002, improvements are evident in relation to overall school provision for ICT through the implementation of C2k. Moreover, there has been a sharp rise in levels of teacher confidence in terms of both general competence and in their use of ICT to support learning and teaching. There are, however, some important issues which need to be addressed in order that ICT is embedded effectively and consistently in primary schools.

❐ In over one-third of schools, there is an absence at senior management level of effective strategic thinking and planning for the integration of ICT in the school's provision. There is the need for these schools to plan for the systematic development of ICT throughout the school, to ensure that its potential to support and enhance learning and teaching is realised fully, and that the range of ICT experiences for all of the children is sufficiently broad and coherent.

❐ In the majority of schools, there is a need for the systematic monitoring and evaluation of the provision for ICT throughout the school. Schools need to develop further the effectiveness of their assessment strategies in order to evaluate the contribution that the use of ICT makes to the children's learning. They need to consider how best to implement an effective framework for the assessment of all aspects of ICT, i.e. the range and quality of experiences, ICT capabilities and the contribution their ICT has made to learning and teaching across the curriculum.

❐ Continuing staff development in ICT is necessary to increase the teachers' awareness and understanding of the potential of ICT to support learning and teaching. In a significant minority of schools, the staff are committed to the development of their ICT competence through a combination of appropriate school-based and centre-based training. Despite this, many teachers still need further professional development to enable them to use the wide range of available software tools and ICT equipment more effectively to support and enhance learning and teaching. Significant investment to date in teachers' professional development and training through major initiatives, including NOF and 'Connecting Teachers', needs to be sustained and extended at a strategic level in order to strengthen teachers' confidence and provide them with the necessary resources and skills to embed ICT into their practice.

❐ In most nursery units attached to primary schools, some provision has been made to include the unit in the school's C2k network, giving access by the staff and the children to the managed service. There is no such provision nor access for nursery schools and other stand-alone pre-school centres with places funded by DE. To ensure parity of

access, the managed service needs to be extended when resources allow to include all pre-school children.

❑ During the course of the inspection survey, there was a growing awareness among teachers of the potential of LearningNI as a flexible, feature-rich on-line environment, to encourage and facilitate access to, and sharing of, resources within and across educational communities. It is important that school management and staff are fully aware of, and trained in, how to maximise the benefits for learning and teaching in this important development.

Information and communication technology has the potential to improve, significantly, the quality of learning, teaching and management in schools and to help raise the attainments of the learners. The findings of this report provide a context within which schools can review and self-evaluate their current provision for ICT and identify aspects for further improvement. The report records the progress made from the ICT report of 2002 and highlights the need to build on the current effective practice to ensure that children benefit from enriched ICT experiences in primary schools, that they have the necessary ICT skills to support their work in post-primary education and that they engage effectively in an increasingly information-based society.

SCHOOLS IN THE INSPECTION SURVEY

Ballee Primary School, Ballymena

Ballymacward Primary School, Lisburn

Brooklands Primary School, Dundonald

Bunscoil an Chaistil, Ballycastle

Carr Primary School, Lisburn

Castledawson Primary School

Cookstown Primary School

Drumbo Primary School

Gaelscoil Uí Dhochartaigh, Strabane

Hamiltonsbawn Primary School, Armagh

Hardy Memorial Primary School, Richhill

Macosquin Primary School, Coleraine

Mossley Primary School, Newtownabbey

Oakgrove Integrated Primary School, Londonderry

Our Lady's Primary School, Tullysaran, Dungannon

Rathenraw Integrated Primary School, Antrim

Sacred Heart Primary School, Rock, Dungannon

St Jarlath's Primary School, Dungannon

St Joseph's Primary School, Killeenan, Cookstown

St Kevin's Primary School, Belfast

St Malachy's Primary School, Castlewellan

St Mary's Primary School, Glenview, Maghera

St Patrick's Primary School, Aughagallon, Craigavon

Tannaghmore Primary School, Lurgan, Craigavon

Termoncanice Primary School, Limavady

Victoria Primary School, Carrickfergus

GLOSSARY OF TERMS

Broadband 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.

Data projector 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.

Desktop publishing 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 pupils to create leaflets, news-sheets, brochures and to present coursework.

E-mail Involves the sending and receiving of messages electronically normally using the Internet.

Internet A worldwide 'network of networks' connecting millions of computers using telephone and cable communication links.

Internet Acceptable Use Policy Every school must create an acceptable use policy document outlining the ways in which the computers and the Internet can or cannot be used. Pupils 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 pupils 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.

Pupils are assessed against eight level descriptions for each of the four strands of IT competence. The level descriptions describe the types and range of performance that pupils 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.

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.

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.

Video-conferencing A form of electronic communication that enables groups of pupils, 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.