MICRO SCOPE

Early Years Special

Summer 1997

- Preparing for OFSTED in your nursery
- Using CD-Rom with young children
- Mathematics + IT
- Making IT work in a Reception class
- Emergent writing and IT at KS1
- Ideas for using a paper keyboard

NEWMAN COLLEGE with MAPE

Contents

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MICRO-SCOPE
Early Years Special

Dedication

A Poem by his Daughter

We have all got
a prison in the sky
dangling on a slender string
above our heads.
. . .
BUT the best escape
is attack
from all sides
Give it a good honest hammering
. . .
We can.

And then, grubby and triumphant
We can picnic in the rubble.

Jeremy's daughter
(http://medweb.bham.ac.uk/cancerhelp)

It was over two MAPE Conferences ago that Chris Robson came bubbling up to me (Chris was always bubbling over with something), wearing one of her teddy bear jumpers (as she nearly always did), and gave me one of her friendly hugs (she was always giving people friendly hugs). 'Barry', she said, 'you're not too busy nowadays, are you?' This was not really a question because she was not one for beating about the bush. 'How about editing an Early Years Special?'

I am not sure exactly what I replied. Probably taken aback to begin with, and then some umming and aah-ing, which she took for a 'yes'! The early years children had always been very close to her heart, and she already had some ideas for articles, had chatted up some contacts, and dropped other names we might find useful. So we set the ball rolling.

Then for very many of us, a numbing shock when she was fairly abruptly taken from us: a terrible tragedy and a horrible waste. There followed a long hiatus while we all tried to take stock of where we were and how we would manage without her. But Chris would never have let us stop, and life moved on, all the richer and happier for her being around. So I hope that this Early Years Special is treated as a very 'special' Special and is the sort of thing she was looking for.

The sentiments in the above poem brought home many of my feelings for Chris, and hopefully from out of the rubble of her going, we all can enjoy those things she left for us to have a picnic with. On behalf of everyone involved, I would like to dedicate this edition to her memory.

Barry Wake

'Retro-Scope' – by way of an editorial

Barry Wake
Educational Consultant

'Today's children are growing up in the computer culture; all the rest of us are at best its naturalized citizens.'

(*Life on the Screen*, Sherry Turkle, p. 77)

IT then

Way back in 1985, MAPE brought out a *MICRO-SCOPE Young Learners Special.* At that time, primary schools had had their own computers (invariably just the one) for only a few years at most, and these were placed more often than not with the older children. Suitable software and teachers' skills in Information Technology (IT) for the young learners were not that abundant.

In the leading article of that *Special* of twelve years ago, David Marshall wrote about the one timetabled 'micro' and of still having to convince infant teachers of the educational validity of IT. Most programs were on tape! (Indeed, the 'MAPE Tape' that used to come out annually was awaited with bated breath by many primary teachers!) A printer was seen as an essential 'peripheral', and similarly 'Concept keyboards' and Big Traks were advocated as further ways of increasing the usefulness of IT.

His major themes, however, are just as important now, as then: being flexible and sharing ideas and experiences, having an IT policy, and a toolbox of software. Above all, we need to make sure that IT plays an integral part in our curriculum, not something added on, but meeting the needs of the children. Being prepared to think about how and what we teach, and then to change, is still a vital approach for today's classrooms.

In another article, Mary Bascombe's four- to six-year-olds were busy incorporating *YourFacts* and *The Animal Game* into their current topics of 'Caring for Pets' and 'Facts about our Holidays', for example. Using the computer gave the children new experiences which stimulated meaningful discussion, enriching vocabulary, and encouraging creative thinking and learning.

Mary also wrote of her gratitude for a ten-week course on Microcomputers for Beginners, and for the help and encouragement from a certain Reg Eyre, a name not unknown even to current *MICRO-SCOPE* readers. However, ten-week courses along with Local Education Authority support have dwindled somewhat, if not almost disappeared, (though don't forget that MAPE members still have their own regional events). The software Mary used may since have improved, but the two types of data handling she describes have become even more important in these days of 'information overload'. Children really need to start asking questions in the early years.

PODD provided the source for Di Wailing's and Della Cox's article about the contribution of the micro to both oral and written language development. Podd, you may remember, looks like a sort of bright red tomato or apple, and is able to 'do' things, except that the user has to discover exactly what. These children found that he (Podd always seemed to be a 'he') could not kick or bite or be nasty at all but he could run, jump, dance, frown, whistle, vanish, eat, glide, inflate and so on. In fact there are some 120 'actions' that Podd can do, and the discussions about why he could not do others were quite illuminating.

It was also possible for the children to string five of Podd's actions together and create a simple animated story for themselves. Here the key phrase was children learning to be 'in control' of the computer, not being controlled by it. Again, today's software may well be more powerful, with CD-Roms bringing in sound, photographic quality images and even video clips, but there still seems to be little around (*Smart Alex* notwithstanding), in terms of simplicity, effectiveness and enjoyment, that can do what Podd did! Or didn't!

Jen Knowles and Jim Bradbury showed how simple wordprocessing evolved from enthusiastic and successful use of a 'Concept keyboard', enriching children's language and concentration, as well as cooperation. The flexibility of the overlay keyboard with *Prompt2*, a forerunner of *Prompt/Writer*, was a real stimulus for many teachers who could easily adapt the words or pictures to suit the curriculum and the individual. For the children it meant putting more effort into the thought processes rather than the physical representation of the language.

Nowadays, the mouse seems to have taken over from overlay keyboards, and programs such as *My World* allow teachers and children to adapt and make their own activities quite easily. Then there are wordprocessing programs that enable you to have banks of words to choose from, such as *Whow* from Newman, and even read them back to you! But there is still a great deal that can be achieved even with limited software by an imaginative teacher.

Adventure games, in the guise of *The Lost Frog* came to the fore with Gwenda Cottrell. Starting off very simply with a whole class demonstration, the children were soon working in small groups, sharing their findings, as well as writing and painting about their experiences. After about half a term, these young children had learnt about maps and scale, precision in the use of language and the importance of logic and hypothesis. Then the children started applying all their new knowledge and skills to make their own adventures! As Gwenda points

out, this activity also showed how much the computer can stimulate and enthuse work away from the keyboard – another key point even for today's classrooms.

Strangely, however, such adventure games seem to have disappeared from the classroom. The modern CD-Rom variants such as *Mixedup Mother Goose* and *Where in the World is Carmen Sandiago?* are making a come-back but have different educational aims from *The Lost Frog*.

Picture Builder was one of the first graphics programs that allowed its five basic shapes to be stretched, squashed, rotated, moved, coloured in and printed out, amongst other things. Gay Foxhall wrote about the way it was fully integrated into a topic on Fairgrounds. The children first sketched out a design which they then transferred to *Picture Builder*. But this soon brought home to them the things that the computer could do – and could not! Some designs could become more elaborate, others were limited by the software and even the shape of the screen. In this way, problem-solving strategies within a meaningful context became an important part of the children's work. Yet another 'truly content-free program' as Gay put it.

This is one program that has stood the test of time for some, having been recently revamped by Newman Software. Other graphics programs have come a long way, with millions of colours, various ways of manipulating shapes, and incorporating clipart, scanned images, video stills or photos from a photo CD-Rom. But perhaps *Picture Builder* fits more into the curriculum of maths, rather than art.

Beryl Bartter also stressed this open-ended aspect in her article on *Logo* where the computer is used as a learning environment and not a drill and practice machine. 'Robot Islands' described a detailed, planned sequence of activities where teacher input was essential to encourage and involve problem-solving in mathematics. It began with an introduction to the floor turtle and led on to children designing their own Robot Islands for themselves and their peers to navigate using Logo commands.

Logo seems to have lost some of its impetus today, probably lacking the dedicated enthusiasts of those times. But it still clearly maintains a valuable place in the early years curriculum, and new variants have been developed, such as *Winlogo*, *Honeylogo*, *First Logo*, *Turtle-It*, etc. The Jessop and Valiant floor turtles are being added to or replaced with the likes of Roamers, PIPs and Pixies.

IT today

In many ways, it is quite astounding how fast information technology has developed from those days. In every school in the UK there are powerful computers for teaching and learning, and also for administration, sometimes enough to have ten or twenty in one room, especially if some are small portables. Many early years classes may have their own multimedia systems, using sound and video facilities, and a printer too, sometimes a colour one at that. And not just computers: electronic keyboards that can reproduce the instruments of a full orchestra or pop band, complete with audience applause, or a whole range of almost unimaginable sounds. A few schools are even beginning to link to the outside world via the Internet, accessing resources from almost anywhere in the world, as part and parcel of their normal classroom activities.

Attitudes have changed too. The computer is not seen as a super calculating machine or even just a tool. Increasingly it is '. . . less like a hammer and more like harpsichord' (Turkle, p. 61). Some children have access not only to computerised toys but to quite sophisticated systems in their own homes, increasing the IT skills for some, but not for all.

In the classroom too, IT has had its profile raised. It is now an essential element of the whole curriculum, with its own policy, planning, progression and assessment schemes. Here, even nursery and pre-school children should 'use technology, where appropriate, to support their learning' (SCAA, p. 4).

However, the underlying themes of children being extended and extending themselves, of the empowerment, the excitement and enthusiasm that IT can still engender, are clearly visible in the *Young Learners Special*, just as much as they are in many early years classrooms today.

If anything, the last ten years have shown us four important principles:

- young children should have access to powerful systems in order to reach as wide a curriculum as possible;
- the use of IT must be properly integrated with the early years curriculum to be effective;
- teachers and helpers need time and support to bring about such effective integration;
- and young children can do it.

The children in the *Young Learners Special* were five to eight years old. Now, some twelve years later, this group would be seventeen to twenty; some still at school, some in higher education, some travelling the world, some working and some not. Many changes have happened in between, and there are many questions being asked, as well as much speculation as to how things will change in the next century. We, who are involved in educational Information Technology, need to ask questions like: 'How much did IT help those young learners? How has it affected them? Did we handle it properly? Have things improved? Did we move fast enough? Or are children and teachers able to adapt only slowly and piecemeal to such changes?'

This *Early Years Special* does not set out to answer these questions directly. In fact, we still need to ask them of today's use of IT in the classroom. Hopefully, however, the articles that follow will clarify and sharpen some issues, remove and raise others. Above all, we hope that it will give you some ideas of what is already possible and even inspire and enthuse you into exploring for yourselves the great potential of IT for learning in the early years classrooms of today and tomorrow.

And of course, it is our privilege to be able to watch these young children and to learn from them:

> *'Indeed, in much of this, it is our children who are leading the way, and adults who are anxiously trailing behind' (Turkle, p. 10)*

Forward with IT

Jean Ensing
Former HMI, Specialist Early Years Advisor

It is rare today to go into any class with children of nursery or infant age which does not have a computer – a computer which is ready to use and which has a range of interactive programs, programs which often focus on graphics and sounds and immediately move the child into the many aspects of early literacy and numeracy. It is a case surely of Information Technology taking children forward to Basics!

Teachers recognise, of course, that by the time children begin school most are competent users of technology in its wider sense. Babies watch their significant carers operate the TV and microwave ovens. The pram stops by a hole in the wall where buttons are punched and money spurts out. Toddlers quickly learn that the video can be programmed and that favourite stories can be retrieved from video-tape. Very young children use audio-cassettes, programmable toys and computer games. In short, today's children begin school with a raft of experience about the applications of technology and a level of dependence on it. They come to their first class with a depth of knowledge and experience which their teachers probably only acquired in adulthood.

A prime objective of early years education is to build on children's earlier experience and to relate previous and new learning. For schools, the problem they grapple with is how to organise and manage that building process so that it fits in with the characteristic learning behaviours of young children and the consequent teaching goals.

Young children are active learners, active with all their senses. They are active because they are curious to know things and strongly want to master the skills they see older children and adults using. This means that teachers have to provide experiences which stimulate and feed that curiosity in such a way that children can learn new skills, practise them and, importantly, talk about them.

The computer is one powerful tool for bringing together learning and teaching in a way that is engaging and appeals to the young child's sense of fun. This can be clearly seen when three- to seven-year olds use the computer as another learning experience, perhaps for sequencing musical sounds so that they make the tune of a nursery rhyme, for determining the actions that *Podd* or *Smart Alex* can do, or for orientating an object to match a number with a set of things. Such programs allow children to use existing knowledge, to repeat actions, to learn from their mistakes and so to clarify meaning. The program acts as a support to learning and can enable the child to explain an idea or a concept. It does not replace the human teacher who then has the critical role of encouraging the children to describe what they were doing or will do in order to solve a problem. Technical literacy has to be given voice to transform it into language skills and competence with numbers, shapes and space.

The younger the children, the more they work as individuals who each want to make sense of their own experiences. To help them do this, schools try to create an atmosphere in which young children feel secure enough to experiment. Firstly, teachers try to provide warm and reassuring physical and intellectual spaces, spaces within which children can explore and investigate through practical and first-hand experiences. Secondly, teachers usually plan to theme together into connected experiences and activities the knowledge, skills and understanding they want children to develop. In such a learning environment and climate children's ideas can flourish.

An excellent example was the three-year-old girl who first thing in the morning said 'Your dress looks like the rain forest' (the rain forest was the class topic). She went away and later showed me her painting of the woman wearing the rain forest dress. She went off again and later fetched me to see another printed picture of me in the rain forest, in the rain forest dress, produced by her on the computer. Later in her group's review of the morning the child described the sequence of activity. This child had spent the best part of the morning session pursuing and translating her interest in the topic through dialogue, painting and IT, and at the end she evaluated it by saying 'I did a lot of hard things!'.

Such an example demonstrates how, in the early years of the schooling process, quite rightly, children spend a considerable amount of their time on self-selected tasks. They opt to use the computer because they find it interesting and challenging and it is a way of developing their work. Therefore, from the moment of choice they have an investment in being involved or, as some might say, of staying on task. Their level of concentration and perseverance can be remarkable.

I believe IT has a firm place in early years education but there are three main issues to resolve before it is used as effectively as it could be to help children learn and develop. Learning basic skills is not worth while without positive social, emotional, physical, intellectual and spiritual development. That means that schools have to provide a high-quality learning environment which takes account of children's all-round development, not just one or two aspects of it. Crucially for the younger children, their class or working areas need sufficient space for imaginative and creative work, quiet and noisy activities, floor, table and outdoor work. Obviously these demands place a premium on space and the way it is

organised and managed to encourage creative thinking. Finding a place for the computer has to be reconciled with all the other needs.

Next, schools have to provide high-quality learning experiences for young children. To achieve that goal they need good resources. Sufficient staff with sufficient equipment and materials to work in sufficient space is *not* enough. The staff need the expertise or the access to expertise which enables them to purchase and use resources well. The school needs a supportive management with the backing of its governing body to recognise the value of suitably funding the early years and regular professional training. And the school managers and governors need a framework of support too. Finding the money for employing staff, equipping and replacing expensive early years items, buying computer programs and giving staff time to develop their use has to be reconciled with the impact of low primary school budgets.

Thirdly, the schools need to affirm the prime role of high quality adult interaction with children in early learning, an affirmation which is backed up by an agreed school policy for teaching and learning in the early years, a school policy which involves parents and connects them with their children's learning and their school's teaching. Finding the time to develop an early years teaching and learning policy has to be reconciled with the burden of coping with all the demands on schools and governors.

In this paper I have used the words *experience* and *activity* many times. These words are inextricably woven into early years learning whether the teaching tool is communication with a person, through a computer, play or creative art. Any of these experiences or activities can be of high or low quality. *The challenge for the end of the 1990s is to make all early learning equal the high quality of the best practice.*

Computers in the nursery?

Elvira Watson
Director, Elvira's Nursery Group

The idea was outrageous – like letting a child drive a car!

CD-Rom – pixel – megabytes! Nightmare and trauma – motherboard, modem and mice – they had to be kidding!

What industry could possibly expect me to take it seriously, using such a ridiculous language. Nursery jargon, 'doggy, ducky, and tiddly-widdly' was always the source of giggles – but this? Buses, bits and bytes for goodness' sake. And to what benefit for the children? Did they really need to be shown this piece of Houston technology? Better they be protected from it!

Thousands of questions, hours of thought followed. Back to basics – why were we teaching the children phonetics, number recognition, colour identification and sound appreciation? We were implanting the foundations on which further education would stand. Solid understanding and comprehension of the world – ready for the next level at Big School. With that argument, IT had to be included on the nursery agenda. Primary schools already had computers – I was preparing the children for tomorrow's environment.

Just as a child will recognise his or her own name, put sounds to symbols, grasp number values and simple mathematics, it was right for them to be shown how to understand the discipline of technology. The children needed to formulate an appreciation of IT's worth, to value it without abusing and misusing such a huge and powerful resource, which would be a key feature to a great deal of learning and information in their later school and adult life.

After some initial, brief research through computer magazines, it became evident that the scope of IT lent itself not only to the children's benefit but also as a personal management tool. Questions fired up – what make? What model? What size? What cost? Each query on its own became a separate learning curve, so steep that even Chris Bonington might have shrunk from the challenge!

I was desperate for someone to tell me precisely what I needed – a computer angel to fix it up for me, give me personal training and an umbilical cord. I needed help big time, but no two people came up with the same recommendation.

Back to the mags. The more I read just added to my confusion. IBM ads would impress me so much that I was as good as sold on a PC. Then an Apple Mac appeared on the TV and I thought I must have been potty to think of anything else – until a friend bought an Acorn, and I then truly thought, for half an hour, that I had found the solution.

By this time I was so stirred up that I was desperate to buy any old machine and have a play, without taking any more time to view the real potential of the computer, which would have been a bad move!

Before I recklessly dropped a bundle of dosh on a decision, I jotted down what I really, really wanted:

- the children needed to use it – priority;
- I wanted to use it as a nursery management tool;
- my own children would want to play with it;
- some of my personal bits and pieces would need to be done on it;
- it needed to reflect the IT in the children's current and future schools;

• it had to be a *proper* computer – not a play toy.

Checking the local schools, I found the majority were using Acorn computers. The main reasons were that they enjoyed a cheaper and larger educational software base. (That was in 1984 – the market has since changed.)

Whenever challenged on my rationale for introducing IT into the nursery, my explanation of 'tomorrow's children are in my nursery today' seemed to pacify any objection.

Initially, choosing the right applications for the children was difficult. As I became confident in talking about my children using the computer, parents discussed the software they were using at home and brought new titles to my attention.

The annual British Education Teaching Technology exhibition (BETT) gave me the chance to visit many different computer manufacturers and software publishers, to have a go, and to ask blatantly embarrassingly ignorant questions, which were always received and handled with helpful pleasure and kindness. The only real way of seeing if an application is going to be any good is to play it yourself!

Having done all the groundwork, I was ready to invest in the nursery's most expensive piece of equipment: an Archimedes A3000 with colour monitor, and a colour LC10 Star copier printer. All my own business demands were met with a program called *Pipedream*. I spent as much as I possibly could, and it broke my heart six months later when I realised that what I had put my life's blood into was already out of date.

Even in those days I put high demands on my teaching staff, and the Archimedes was used as a multi-purpose tool, covering most areas of the curriculum and managing our information. Both teachers and children were benefiting from its wide-ranging capabilities.

In my search for an Archimedes, I eventually found a man I could trust and gave him my order for my nursery computer, impressing upon him that he was dealing with a complete computer dummy – I would need help!

A mere lad was sent to instil life's breath into my piece of plastic fantastic technology. He showed me how to work it at a demonstration speed that would have pleased Nigel Mansell at Brands Hatch. But I, a nursery dinosaur, was too proud to display my complete ignorance, for a third time!

I did not know my icon bar from my disc drive. Three hours later, having made no further headway than accessing the Archimedes logo, desperation and frustration climaxed together. The manual? You must be joking – have you ever tried to read one? I made my first call on the help line. And I kicked myself for leaving it so long. They were quite used to handling idiots like me and once I had overcome the 'I am a first time caller' syndrome, my hotline link-up was brilliant.

Once I was *au fait* with my plastic fantastic, I was ready to introduce it to the children. Initially we named our computer 'Freddie' to overcome any prejudice or phobias they might have already acquired. He had his own little table and chairs, with his floppy discs and printer within easy reach of the children. They chose when to play with him and the program they wished to use.

So now, picture this – downtown Kingston 1997 – Elvira's Montessori's Day Nursery:

Anticipatory, twitching fingers excitedly tickled Freddie's keyboard. The glow of the monitor highlighting the enthusiasm barely containable on her face, Ruth wriggled with electric energy desperately thinking of new key sequences to achieve a yet unknown result displayed on the screen. No fear, no teacher to caution or bridle her constant attempts to unlock the secrets just a few key strokes away. Desperately, she needed to see what came next.

Ruth's excitement was more contagious than chickenpox. Very quickly a group of children gathered around, alerted by the mysterious musical jingle coming from the semi-comatose, confused Freddie. The newly mustered infant audience issued their tried and tested solutions to resolve the problem of access.

'Press return,' Peter ordered. At three-and-a-half years he was already proficient at the fundamental keyboard skills and jargon.

'I've done that!' rebuffed Ruth as she pressed 'return' several more times in anxious fury, just in case – still nothing!

'Press escape.' Heidi recalled how she got out of a boring draw-and-sketch program earlier. She reached through the children to press it herself.

'It doesn't work,' Ruth insisted, removing other little fingers invading her keyboard.

'I'll reboot it for you,' said Jean-Paul, his hands shoved deep into his trousers. He screwed up his face and squeezed his lips together, shaking his head as he diagnosed the impossible dilemma. At four-and-a-half years, he was our 'techie magnifique'.

Ignorance gave way to knowledge. Ruth gave up her chair with grace, and Jean-Paul, like John Wayne arriving at Dodge City, took charge. With confident, agile fingers Jean-Paul turned Freddie off, only to resuscitate him seconds later. As he switched life back into him. He pressed Freddie's 'R' button long and hard with his authoritative index finger. Having restored order, he handed Ruth back the mouse.

Demurely she inserted the floppy disc – I hasten to add, there has never been anything floppy about our discs! Using the mouse – with a tail that comes out of its nose! – Ruth positioned the pointer onto the disc drive on the icon bar and clicked. Freddie's tummy rumbled away before a new window was displayed on the screen. With surprising proficiency, which only comes with practice, a double click, further digestive stirrings and hey presto! The program jingle fanfared the cheers from the triumphant children.

The children have never looked back. As they play they learn. The older children enjoy demonstrating and helping the younger ones. Likewise the younger ones enjoy watching the older ones, and thus a constant learning cycle is formed.

Preparing for OFSTED in your nursery: some questions to ask

Ursula Daniels
Education Consultant, Registered Nursery Education Inspector

So the letter has arrived! You have a date for your inspection!

No doubt preparations have been in hand for some time, but what about information technology? Has that been forgotten or simply pushed to the bottom of the queue? And what will be expected anyway?

The 'Desirable Outcomes' state that pupils should 'use technology, where appropriate, to support their learning'.

What does that statement really tell us? On the face of it – not a lot! But if that outcome is to be effectively implemented, it requires the same thought and preparation as other aspects of the curriculum.

Let's start with the term 'technology'. Instinctively, people think 'computers'. But technology or information technology (IT) is broader than that. And in many pre-school settings there are other good examples of information technology around – tape recorders, video recorders and fax machines – maybe even programmable toys and electronic music devices. Whilst some settings may have a computer, or access to one through a close link with a primary school, others as yet may not. If you are one of the latter, try at least to make use of technology in the broadest sense.

The second part of the statement is even more important. It's to do with how technology is used – it has to be appropriate and to support learning. So it's not simply a question of having a computer switched on – or a programmable toy or anything else, whatever it is. It has to link with the rest of the curriculum – for example, to develop skills that are being worked on in other areas, such as number recognition or reasoning, or it may develop further understanding of a topic such as the sea or the farm.

From this a whole series of questions emerge.

Is information technology included in curriculum planning?

Whilst in small settings with only a few staff, planning can work successfully on a less formal basis, larger nurseries will require a greater amount of written information so that all members of staff can be made aware of the purpose of IT activities and understand the context in which it is taking place.

- How does it relate to long term planning?
- What are the learning objectives?
- Why is this particular teaching method being used on this occasion?

This detailed planning should also contribute to continuity and progression so that staff build upon the children's existing knowledge, understanding and skills.

Which areas of learning are being supported through the use of information technology?

If IT is being used, it may have developed on an *ad hoc* basis rather than through deliberate planning. At this point, it would helpful to list the uses that are made of IT. As far as the use of computers is concerned, this may well have been determined by the software available, rather than by the aspects of learning or skills that are being developed. For instance, there may be a glut of language programs, but little on numeracy. A programmable toy may be developing a wide range of skills, but these may now need to be reviewed and extended in the light of the desirable outcomes.

Does information technology improve the quality of teaching and the quality of learning?

In order to do this, IT needs actually to make a positive contribution to develop progress in learning and raise attainment. This is why the purpose needs to be clear in the planning. It is not enough that they are having a 'dabble' or simply gaining awareness of technology. Information Technology can be put to a far better use than that.

If IT is being used well, it should be approached in the same way as other activities. For example, there should be good interaction with the children, effective and challenging questioning to develop thinking and language, and a growing independence should be encouraged.

Does it raise expectations of the staff for pupils' attainment?

One danger when IT is first introduced is that staff underestimate children's capabilities or are so impressed by the outcomes that they neglect to analyse the skills involved. For instance, a computer can produce a beautiful

How can IT support the six areas of learning?

1. Personal and social development

- Social skills – working in pairs or as a member of a group; learning to share and co-operate with one another; developing independent learning and decision-making.

2. Language and Literacy

A multi-sensory approach – pictures, words and sound.

- Talking stories/nursery rhyme books – basic language learning skills (left to right, top to bottom); listening; learning that words convey meaning. Sound and animation aid the interpretation of pictures and understanding of meaning; books presented interactively.
- Talking wordprocessors – listening to their own words being read back to them; their stories where adult acts as scribe.
- Specific skills – e.g. letter recognition, the shape and the sound of letters.
- Multimedia authoring package – create pages that contain pictures, sound and words. Advantage for young children – not dependent on hand writing/spelling; can be a stimulus to the purposeful development of oral language skills. For instance, after a day out at a farm, photographs taken with a still video camera could be used alongside the children's own recorded voices – 'I liked the pigs best'; 'We fed the lambs'.

3. Numeracy

Visual representation of mathematics.

- Counting, matching, sorting, sequencing and shape recognition can all be learnt in a colourful, interactive environment. This supplements practical activities and is an introduction to more abstract representation. i.e. it can provide a bridge between concrete and abstract thinking.
- Mathematical vocabulary such as bigger than, in front of, can be developed. Animations can demonstrate the meaning clearly.

4. Knowledge and Understanding of the World

Children have a natural curiosity about the world and about information technology itself.

- Television and video are an accepted part of their life. Fax can send words and pictures to another school or to parents, computers can contribute to all areas of learning, and programmable toys, which enable children to give instructions such as forward, back, left and right, develop spatial awareness, logical thinking and sequencing.
- Software is available which will enable them to become more aware of their environment – creating a scene such as the buildings in a town, the contents of a house, the creatures that live in a pond or the animals that live on a farm.
- CD-Rom can open up many areas for exploration – under the sea, outer space and life in other countries.

5. Physical development

- Using a mouse or other input device to control what is on the screen develops hand-eye co-ordination, controlled movements of the hand.

6. Creativity

- Art packages – as an extension to other art activities – shapes produced very simply; changes can be made; whole areas of colour removed or added; Brush width easily varied; effects such as spraying.
- Electronic music devices enable children to use their imagination and express ideas/feelings. Small, free-standing keyboards can play, record and re-play a series of notes with a range of different instruments/effects, including animal sounds. More elaborate systems can be linked to a computer. Music produced by the children can then be added to multimedia presentations, for example to accompany their pictures.

hard copy/print-out in colour of the children's work and the fact that a child is able to manipulate the mouse or other input device may seem a massive achievement to a less confident member of staff.

The important questions are:

- What has the child gained from the activity in terms of real skills, knowledge or understanding?
- Has this method helped them to achieve something that they might not have done through other methods?

How can it support individual pupils?

Work with IT as with all other teaching must meet the needs of all children:

- Is it used to extend and challenge the more able pupils?
- Does it help pupils with English as an additional language?
- What about pupils with special needs?

The great strength of IT as a resource is that it can make a strong contribution to the teaching of able children and to those with special needs, enabling the latter to carry out tasks that they might otherwise not have been able to tackle, boosting their confidence and self-esteem and reinforcing skills which they find it difficult to master.

How is information technology monitored?

Being aware of the strengths and weaknesses in the use of IT within the setting will enable improvement to take place.

- If it is felt that IT is a weakness, how is this being tackled?
- Is there a development plan?
- Is IT included in resource planning?
- Are staff deployed so that their IT skills are taken advantage of?
- What are the training needs?
- Is formal training planned or are there other methods in place, such as one member of staff supporting another?

What happens if there is no information technology?

Obviously this fact would rear its head in the report. In fact it could appear in several places – not only as a weakness in the section on knowledge and understanding of the world but also as a weakness in the quality of teaching, in resourcing and as a key issue for action.

So, look around and see what IT you can find. If there is very little, recognise this as a weakness and decide how it will be tackled both in the short and long term. If you've got that far – at least you've made a start!

Making IT work in a Reception class

Pam Larkins
Wheatley Primary School

I teach a class of 28 Reception and Year 1 pupils in a large primary school just outside Oxford. We only have access to a single RM PC186 computer, but with children in this age group there are still a great many programs which can be used to good effect.

Our broad topic for last term was Living Things, but within this there were certain programmes of study to cover, incorporating Geography and Design Technology. In my medium-term plans I wanted to link IT into the topic so that other areas of the curriculum could be taught through IT and not as separate entities. Within this I also wanted to ensure that IT skills were taught.

In Geography we were studying a contrasting locality – Baricho, a village in Kenya. The children learned about the Mureithi family – their home and daily routine. The Mureithi family lived on a compound, and to give them an idea of what it was like I drew out a plan of the compound as a *Touch Explorer* overlay. By pressing the various buildings they were

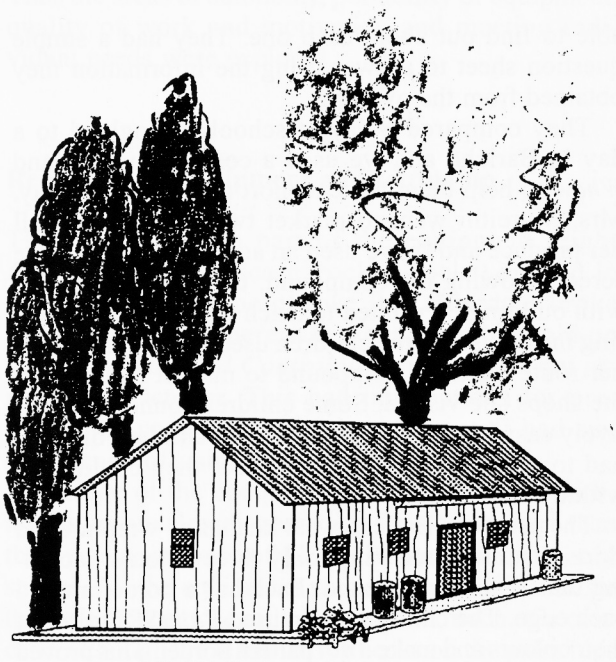

Fig. 1. *The main house.*

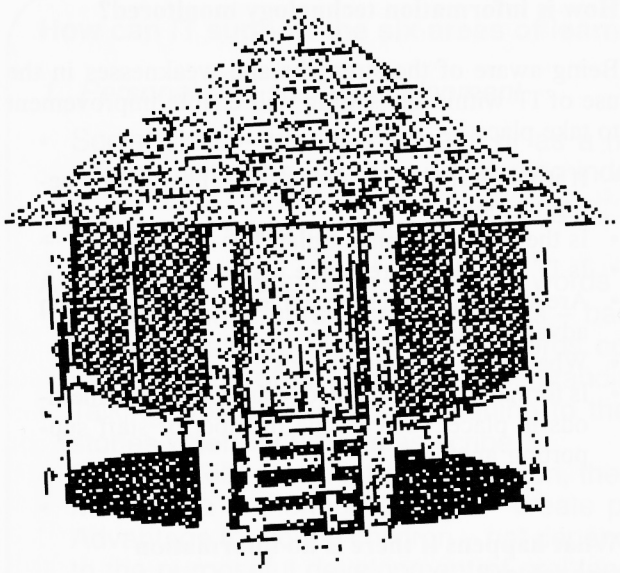

Fig. 2. *The Beans store.*

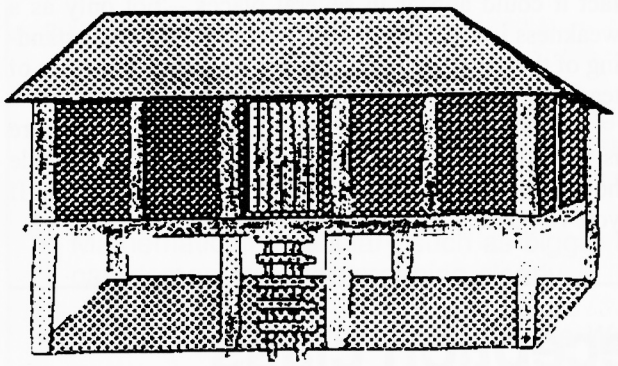

Fig. 3. *The Maize store.*

able to find out about each one. They had a simple question sheet to answer using the information they obtained from the overlay.

They compared a day at school in England to a day in Baricho and we used a concept overlay and *Whow* to help them write a short account of the day. Mrs. Mureithi went to market twice a week to sell her produce and so we used an acetate overlay on the screen showing the compound, the road and village with buildings. I wanted to teach the skill of controlling the mouse, so the children used *PaintSPA* to draw her route from the compound to market and then to the shops she visited. Some children found this relatively easy but I found that for most children of five I had to make the road wider so that they could keep within it.

The people in Baricho wear khangas – wrap-around skirts that are made using only three colours, including that of the background. Each has a border around each edge. The children again used *PaintSPA* to select their colours and make a dot pattern border. This proved to be good skill practice for selecting colours, keeping a repeating pattern going and placing the dot in the right place. The children's control of the mouse really

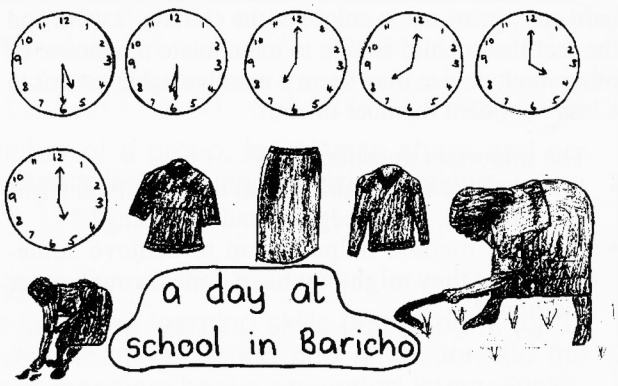

Fig. 4. *A day at school at Baricho.*

improved and this term I extended the activity to design wall paper patterns using dots like Sisely. This term no child needed help in selecting and placing their dots whereas when we first started the borders a number of them needed a fair bit of support.

Mr. Mureithi drove a matatu – his taxi – and so we used the Roamer to be his matatu. The corridor outside the classroom was the road from Baricho to a nearby town and the children had to collect the passengers on the way. They had to estimate how many lengths of the Roamer between each stop, and competed to see who could pick up the most passengers. They learned how to clear the Roamer, program it to go several lengths forward and wait for the passengers. I did not include any turns although some children discovered they could move backwards to pick up the passengers they missed!

In Science we looked at various animals; each child chose his or her favourite and found a picture of it. We made up a *Branch* file using their chosen animals. The children held their pictures and then as various questions were asked to divide them up they physically moved into groups so that they could see which branch of the tree they belonged to – eventually ending up on a twig of their own. Afterwards they played the quiz and although some children are only just beginning to recognise words it worked because I paired each of them with a fluent reader.

Fig. 5. *A map of the village.*

During the term we had linked IT with Geography, Science, Design Technology as well as English and Maths. The use of the computer and the Roamer enriched our activities and we really did have lots of fun!

This article first appeared in Hexagon, the newsletter of the Oxfordshire IT Advisory Team, and is reprinted here with their kind permission. Hexagon is also available on-line at: http://www.rmplc.co.uk/eduweb/sites/oxceu

The use of personal computers in the early primary years

Duncan Gill
Headteacher, Cross Lane Primary School, Elland, West Yorkshire

Our initial bid was to the National Council of Educational Technology (NCET) and was for 32 Acorn A4 portable computers with *Sense and Control* in order to compare the collection and analysis of data in the local environment using IT with traditional methods. The plan was also to develop the use of spreadsheets as far down the school as possible. In the event only eight A4 portables were provided, but with the considerable bonus of 32 Acorn Pocket Books.

Having attended an introductory weekend in Doncaster, where the fuller aims of the project were revealed in the first session, we decided to broaden our approach to fit the equipment now available to these aims. (The full details of the aims had not been available at the time of the bid other than that the project was to trial portable computers in school).

These aims included:

1. to develop pupil's autonomy;
2. to encourage collaboration (team work);
3. to develop school and home links (impact of taking a portable home);
4. to take equipment to where it is needed;
5. to facilitate the collection and transfer of data;
6. to develop new approaches to writing
7. to improve the quality of work and motivation;
8. to meet the needs of individual children.

Bearing in mind these aims and the equipment now available, we decided to look at the possibilities of continuing with the main thrust of our initial project while looking for other possible smaller initiatives plus further spin-offs in terms of developing IT in the school.

The projects

Collaboration, taking the equipment to where it was needed, and the facilitation of data transfer were already included in the main bid which would include the ten- to eleven-year-old children. These children worked in three main groupings to observe and collect environmental data.

We worked with the six most able children in a class of six-year-olds, each of whom was given a Pocket Book with which to work at school and also to take home. Parents were involved and they kept a log of the children's use of the equipment at home. It is hoped that more children will gradually be brought into the project in the future.

We decided to provide every child in a Year 2 class with his/her own computer, be it a Pocket Book or a Tandy Wordprocessor. We contacted NCET and were provided with additional Tandy WP3s and bought ten end-of-range WP2s ourselves. Initially the children used the equipment at school only, reaching out for a computer whenever they felt it was appropriate, in the same way as they would select a pencil or pair of scissors. Children with special needs who needed larger keys were given a Tandy. Eventually the children were encouraged to take the machines home. Thus the areas of autonomy, portability of equipment, quality of work and motivation and meeting individual needs were explored.

Receiving the equipment and setting up

The first and main part of the equipment (eight Acorn A4 and 32 Acorn Pocket Books) arrived in late June, shortly before we in Calderdale broke for the Summer. There was a considerable hold up with the *Sense and Control* units which did not arrive until October. This had implications for preparing the project, since none of the staff had any experience of using the equipment.

Storage of the equipment did not present a problem as we are already geared up for storing more than the average amount of IT equipment for a primary school. All the equipment was eminently suitable for the task. Security equally was not too much of a concern, although we made daily checks on the palm tops and the caretaker stores them away each night in a safe place.

The equipment

We have been delighted with the Acorn A4 machines and the children have taken to them very readily. I felt initially that colour screens would be essential for use in the school (as opposed to data gathering in the environment), but have found the children have adapted well. We may consider adding some colour monitors later. The Acorn Pocket Books, equally, have been superb machines. Since we were already dedicated to Acorn machines in school, we found the new equipment was completely compatible. Insurance has obviously cost the school, but we were prepared for this when we submitted our bid. Durability will only tell in the long run, but the A4s appear rugged though the screens are very expensive to replace.

Having decided to use rechargeable batteries we clearly found it necessary to purchase quite a large number of these along with battery chargers.

Start of the project with pupils

Clearly because of the late delivery of the equipment and the failure of the Pocket Books to operate owing to the flat batteries, the project did not quite get under way as planned. However we are fortunate in having a strong IT background with both children and staff, plus a high level of motivation by all parties. Our INSET has been invaluable and provided by people of the highest calibre. The actual conceptual leaps by us as teachers, not only in the basics of operating the equipment but in understanding some of the principles of using IT to collect and analyse information in the environment, has been very useful and has led to a reassessment of our aims in this our main area of investigation.

Using the portables with young children

Anne Johnstone is coordinator of the project where each child in the class has his/her own machine. The children chose their own machines, half went for the Tandy WP2/3 and half chose the Pocket Books. This had implications for ensuring that the batteries were properly charged and maintained.

The children are learning when to choose the computer in the same way as they are learning to select other appropriate materials and equipment, i.e., when is it better to write using traditional equipment and when is it more appropriate to use a computer. Previously, of course, the sole criterion for consideration was the actual availability of a machine.

The children's initial excitement about having their own machines has now dissipated as it is as 'normal and every-day' to choose a computer as it is to pick up a pencil. The motivating aspect has, however, not decreased and the pupils still find the machines a considerable stimulus when writing.

The children were taught how to change batteries when needed. A considerable advantage of the Tandy Pocket Books was that the children's work was saved automatically and it was almost impossible to lose it accidentally. However a particularly discouraging impact of flat Pocket Book backup batteries was that this caused some children to lose their work.

Matthew Denby was the coordinator of the project where children in his class of six-year-olds were using Pocket Books at school and taking them home at night. There were verbal reports from parents describing how children were developing the ability to use the machines and to explore facilities. Some parents kept a log on the Pocket Books themselves. The children were in no way inhibited and, although the main aim was for them to use the wordprocessing facilities they have explored the time, spreadsheet and database options, one little girl creating her own name and address database. The class were involved in a topic on Australia and the children wrote stories at home on their Pocket Books. They found it easier to express their ideas on the portables than through writing with pencil and paper, their handwriting skills being less advanced than their thought processes. With these barriers removed ideas were more fluently expressed.

One problem which has emerged with the younger children is finding letters when only upper case letters appear on the keyboard. We have used stick-on lower case letters with the large computers, but there do not appear to be any available for the palm tops. Some children found that some of the letters in the font displayed on the screen of the palm tops a little difficult to read. Also, there is not the choice of fonts available to users of the portables as there is, for example, with the Archimedes, where a more suitable font may be chosen. Generally, though, the children have been writing diaries in the wordprocessor and some have used the cards database to compile a file of names and addresses and are exploring the other facilities available to them.

The children love the shape of the Pocket Books and the way the machine flips open. It has emerged that some children prefer to use the larger screen of their parents' home computers, whereas other children prefer the small screen of the Pocket Book and have been found under the bed clothes with a torch working into the wee small hours!

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Using CD-Rom with young children

Janice Staines
Senior Programme Officer, NCET

When children are taught to access information using books, they usually have lots of visual clues (illustrated book covers, pictures inside the book) to help them decide whether a particular book contains the information they are interested in. They also find that most books have a contents list or index and are organised in a fairly standard way (alphabetically or by topic).

When children are first introduced to CD-Rom they will need time to familiarise themselves with what information they can find, how it is organised and how it can be accessed. This is likely to vary from CD-Rom to CD-Rom. Some reference CD-Roms will follow the traditional layout of the printed encyclopaedia or dictionary, others may not.

Children will need to be introduced to the extra facilities that CD-Roms may offer, like speaking words at the press of a button, playing video snippets, animating graphics and the ability to search for specific facts. These extra facilities will not only motivate a child to want to use the CD-Rom, but will often mean that young children can effectively use reference CD-Roms which have been written with an older audience in mind.

You may wish to encourage a group of children to explore a CD-Rom as part of a class topic. If you are working on a topic about 'Animals', for example, you may use the *Mammals* CD-Rom. If the children have not used the CD-Rom before, you can encourage them to browse through the pictures of animals, see video snippets of the animals in their natural habitat and listen to the sounds some of them make. For those children with some previous experience of using the disc you might pose a specific question like 'What can we learn about animals from looking at their faces?' This question will help focus the children's attention and, hopefully, stimulate much interesting discussion – 'He has such big eyes because he hunts at night', 'He finds his food by smelling it – that's why he has such a long pointed nose!' and so on.

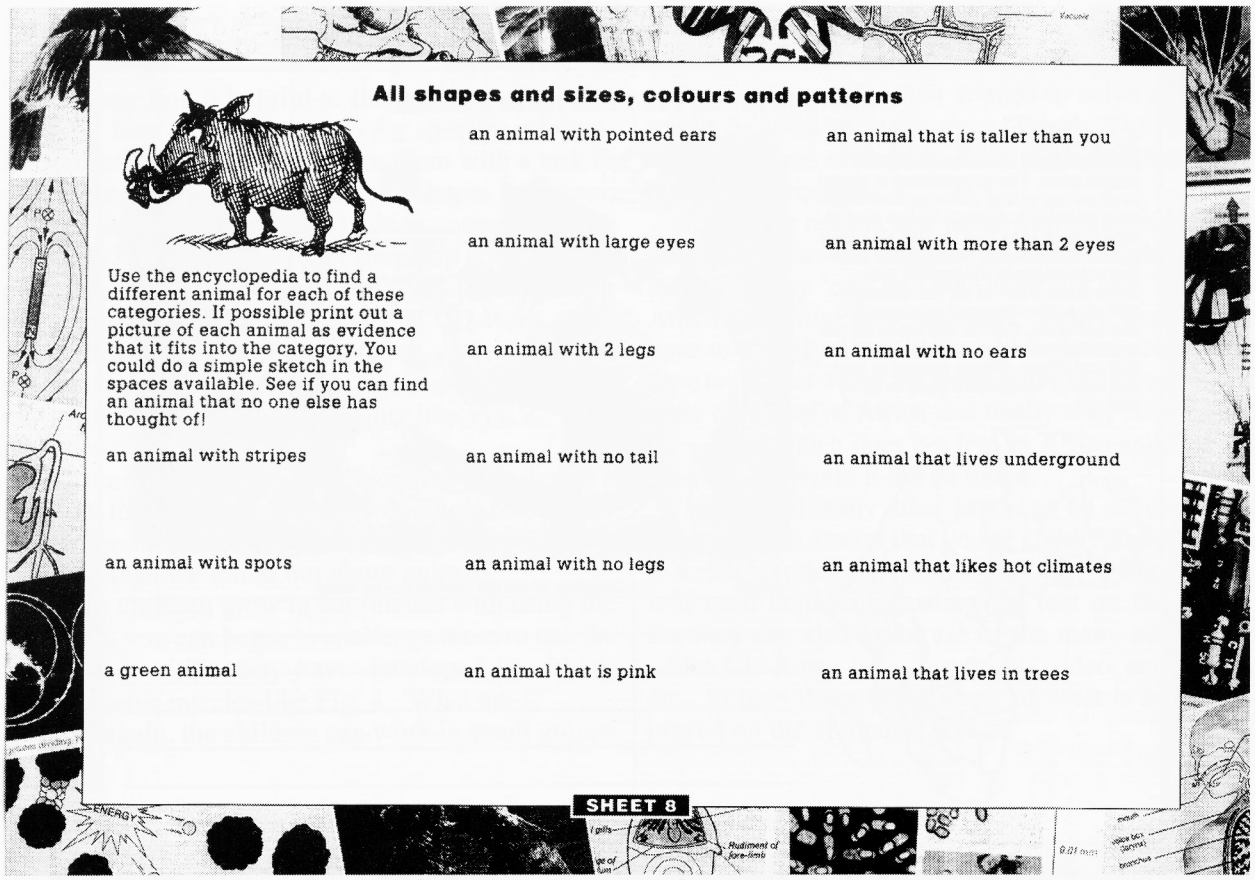


Fig. 1. *All shapes and sizes, colours and patterns.*

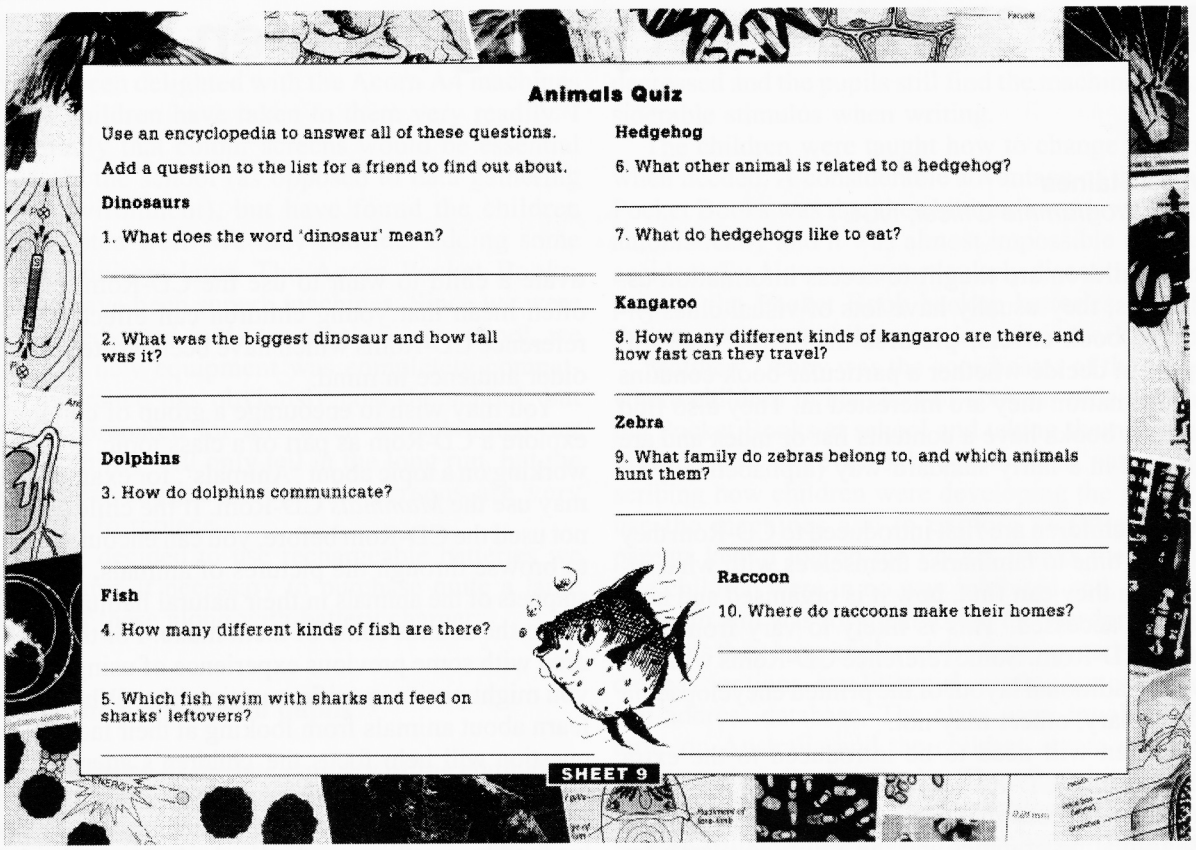


Fig. 2. *Animals quiz.*

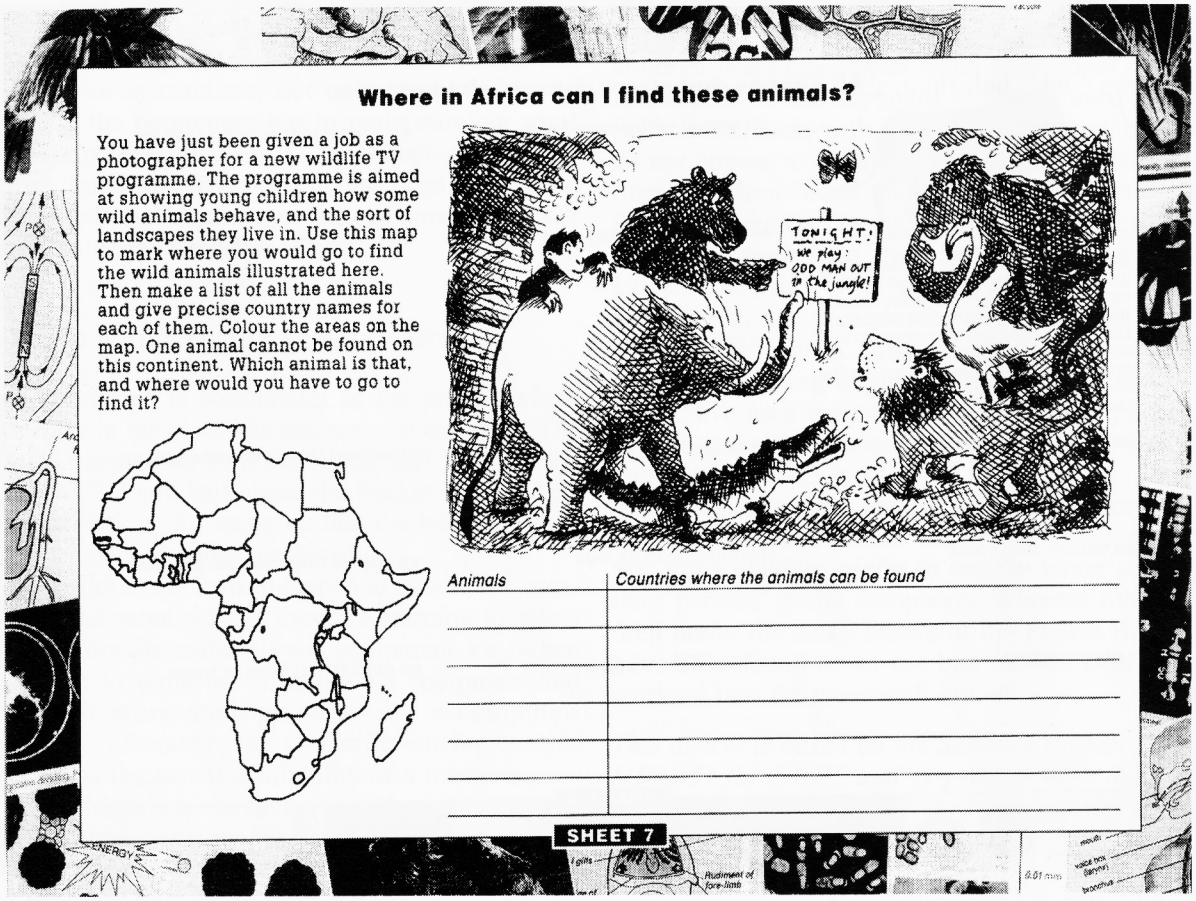


Fig. 3. *Where in Africa can I find these animals?*

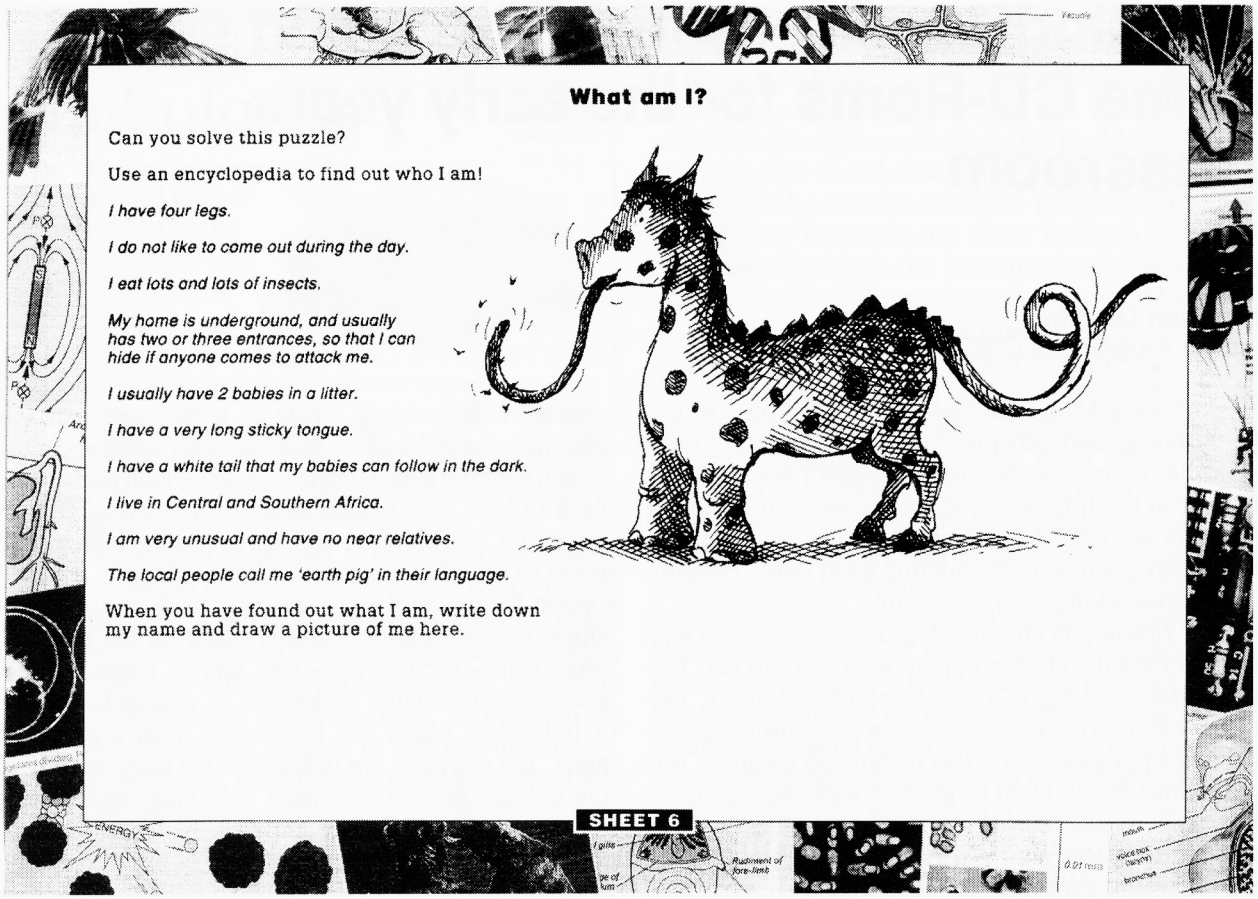


Fig. 4. *What am I?*

You may find it helpful at this point to show the children how they can search for specific information about an animal and present them with a task to undertake. The activity sheet, 'All shapes and sizes, colours and patterns' (Fig. 1) which comes from the *Finding Out* pack from NCET may be a good starting point. You should be able to find the answers using the *Mammals* or an 'Encyclopaedia' CD-Rom.

Progressing on from this activity, you might want the children to find specific details about various animals and present them with a quiz like Fig. 2, 'Animals Quiz'.

It is a nice idea to get the children to then devise a question for their friends to answer. These can be collected together and made into a little booklet called, 'Some things we found out about animals'.

As the children grow in confidence with using the CD-Rom, you can begin to challenge them to use the information skills they have developed by asking them to solve puzzles like Fig. 4, 'What am I?'

Once again, the children can work in small groups to set challenges for their friends to solve and these might be used to make up a 'Puzzle Zoo' display where pictures of animals have to be matched to the puzzle descriptions.

The better readers and those with more experience and confidence with using the CD-Roms might be challenged to play 'odd one out' as in Fig. 3, 'Where in Africa can I find these animals?' Firstly, the children have to identify the animals in the picture. Next, they have to find out where the animals live and identify these areas on a map of Africa and finally, they have to find the animal which does not live in Africa and find out where in the world it can be found.

These, and many other tasks can be developed by the teacher to ensure that young children have access to a rich learning environment. Some young children will need help with reading the text on the screen, but they can also make use of the many advantages which CD-Roms can offer: sound, video, animations, etc., to help them make sense of what is being displayed on the computer screen.

Reading, writing stories and doing sums: some CD-Roms for the early years classroom

Maureen Quigley
Senior Programme Officer, NCET

'Hello', says Millie the cow, 'come and play in my maths house' and jolly piano music invites two- to six-year-olds to practise their maths. *Millie's Maths House* has seven brightly coloured rooms, each containing a different activity. If children select *The Number Machine* they get help with counting up to thirty. *Dorothy Duck* does adding and subtracting while *Building a Mouse House* lets children explore shapes. *Bing and Boing* offers the chance to play with patterns and *Little, Middle and Big* is a size-recognition activity. *The Cookie Factory* and *Build-a-Bug* develop problem-solving strategies. In all, lots of fun and plenty of opportunities for children to interact with the computer. Each activity can be used in two modes: either the free-wheeling *Explore and Discover*, or *Question and Answer*, a useful approach for those who are not too sure what to do next. A supporting booklet aimed at adults, be they teachers or parents, provides an overview of each activity, a list of learning opportunities and some suggestions for extension activities away from the computer. This CD-Rom disc was published initially for the American market, and one or two words for example 'cookie' or 'jelly bean' still betray its origins, however don't let this put you off, all the activities are perfectly valid and a fully localised disc using British accents is now available.

PB Bear's Birthday Party is an 18-page talking story aimed at three- to five-year-olds. PB celebrates his birthday with presents, a ride on a train and a picnic with his animal friends – each has a different regional accent, which is a nice touch. The text which turns from black to blue as it is read aloud, is written in a clear infant font, and there are appropriate sound effects and music to round the whole thing off. There is a lot of support for pre- and early-readers, words and pictures appear on the same line and clicking on the pictures turns them – rebus-style – into words. Pages can be accessed sequentially, backwards as well as forwards, or individual pages can be chosen from a contents menu. Ten activities are linked into the story, they feature colour recognition, shape matching, and counting, they also encourage children to develop their mouse skills and require non-readers to listen carefully for instructions about what to do. You can copy or print the active window, useful for work away from the computer, particularly at school where other children will be waiting their turn.

The Silly Noisy House has been around for a while however, there is nothing dated about it and it still raises a smile.

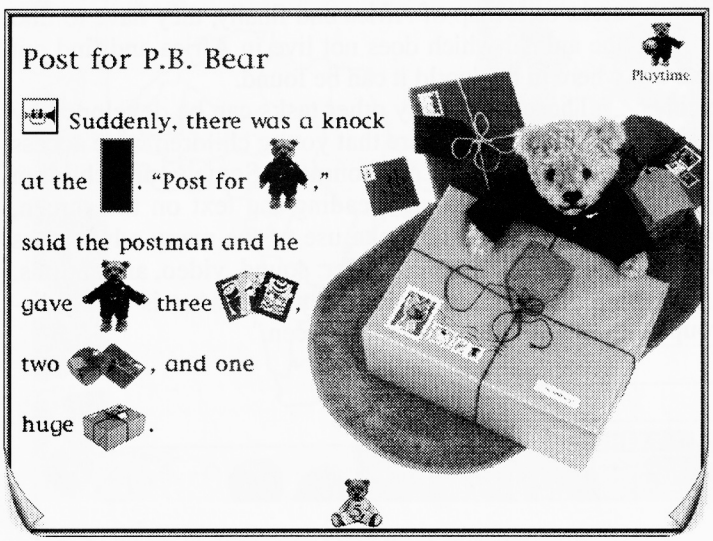
'Knock, knock,' says an adult voice, when you click on the front door of the house.

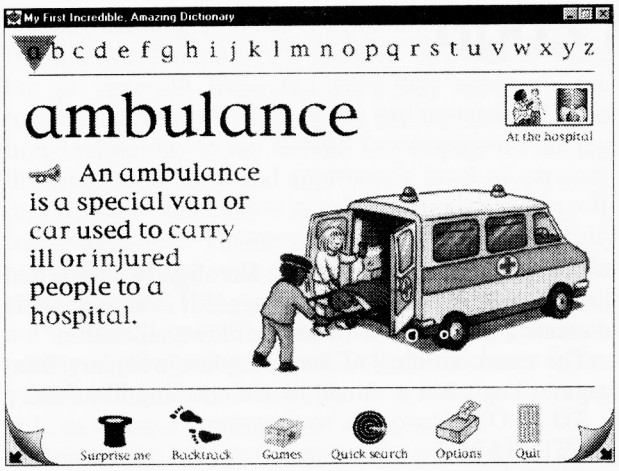
'Who's there?' says a child.

'You,' says the man.'

'You-hoo to you too,' laughs the child.

As you go through the door and choose the hall cupboard, amongst the coats and umbrellas a skeleton dances into view – if you know just where to click. Clear, bright, animated graphics accompany the songs, rhymes, poems and sound effects. In the kitchen a birthday cake is in the oven, but sometimes it's a turkey, and sometimes it's four-and-twenty blackbirds baked in a pie! The house is peopled with teddy bears; there are three in the bath, four sitting around the kitchen table and one reading a book in bed. A sound-matching game comes as part of the fun, and the sounds change each time you play. Secret passages whiz you from one room to another with a whoosh. There are lots of surprises in the *Silly Noisy House* but no narrative. The emphasis is on exploration, and clicking with the mouse produces lots of rewards.





My First Incredible Amazing Dictionary contains over 1000 words. Children choose an initial letter from the alphabet displayed at the top of the screen, and this leads to a screen where all the words beginning with that letter are displayed. Each word is accompanied by a picon (a tiny picture), and by clicking on this, children will move to the definition. All words and their definitions are read aloud, so children do not have to be fluent readers to use this dictionary; they will, however, have to have some idea about letter sounds and shapes to find specific words. As well as the definition and an animated illustration depicting the word, there are cross references to: different meanings, e.g. 'fly – the insect, fly – in an aeroplane'; to opposites, e.g. 'different' and 'same'; and to groups of related words, e.g. 'run' is linked to a screen of action words 'jump', 'hop', 'skip', 'roll', 'chase' and 'kick'. This title can contribute to almost any language work being done in the classroom. There is a backtrack facility which allows children and teachers to look back at all the words accessed in a session, three games, a *Surprise me* option and a *Quick search*. The *Quick search* allows the user to by-pass the picons and look for a written word in an alphabetical list or type it into a box. A word of warning: if children choose to type a word which isn't in the dictionary then the word closest to its spelling will be displayed. For example type in 'plug' – which isn't in the dictionary – and 'plum' is displayed – which is. This is the only weakness in what is otherwise a really well-designed British product. Printing and downloading information can be accomplished easily and there is a leaflet designed for parents and teachers with some suggestions for using the disc.

Carnival Countdown is designed to teach children from four to eight years, basic maths skills. You can choose from five activities. *Carnival Cars* uses Venn diagrams to introduce sorting and classification. *Snap Clowns* covers basic arithmetical skills. *Pattern Blocks* addresses the concepts of size, area, perimeter, symmetry and fractions. *The Bubble Band* develops counting skills and the *Giggle Factory* looks at equality, inequality and place value.

The strength of the program is its huge ability range; for example in *The Bubble Band* at one end of the scale children can start by learning numbers up to five and at the other end can be adding and subtracting 3 digit numbers. In all it adds up to dozens of topics and thousands of maths problems. A 'grow slide' provides access to the different levels of difficulty which would allow teachers to set appropriate activities for individual children. (One child using the program continuously would systematically progress through all the levels.)

There are two modes of use. *Question and Answer* mode provides a directed approach, whilst *Explore* is self-directed. This program is designed for home use and most children will need an adult sitting alongside them until they are clear about what to do. The support materials, aimed at the adult, are essential reading. Teachers will certainly be able to see where children are having problems, and exactly which concepts they haven't understood, as a major component is the visualisation of many abstract mathematical ideas. For example *Odd Otter* and *Even Otter* put laughs and giggles on one side of their scales, and children are asked to put greater, lesser or equal ones on the other side; these are then exchanged for numbers. Mistakes are greeted with 'try again' twice and then the options are reduced ensuring the correct selection is made. Mistakes seem to produce a lot more problems along the same lines for practice. Some of the activities could be done just as easily using cardboard shapes or plastic counters, but teachers who have tried to enthuse the less than enthusiastic, will find the lively cartoon characters, funny noises and little 'rewards' provide a boost to flagging attention spans. And of course this approach offers children the opportunity to practise their maths skills until they are honed.

Finally, talking storybooks have always been popular with early years children. For teachers or children who would like to make their own talking stories very easily, *Storybook Weaver Deluxe* is a really simple program which produces very professional results. There is a good range of ready-made scenes to choose from, and objects to place in the story – such as people, fairy-tale characters, animals, buildings, trees and flowers, and these can be edited if you wish, or you can draw your own from scratch. Sound effects and music can be added from a store of clips on the disc, or you can record your own. Your story can be spoken back to you using a computer-generated voice. Children in particular find this feature highly motivating, and reluctant writers will often produce quite impressive stories if they know the computer will read it aloud to their friends. What's more there are 50 story starters if you lack inspiration!

For details of the programs mentioned in this article, please turn to the Resources list on page 32.

Simple Animation with Logo

Janice Staines
Senior Programme Officer, NCET

Many Logo programs have the facility for changing the shape of the screen turtle to take on the form, for example, of a rocket, a bird or a dog. Most Logo applications also allow the user to edit their own shapes and this is where children can explore the world of simple animation.

Shapes are designed by filling in the square of a grid to build up a picture. (The number of squares in the grid will vary according to which Logo program you are using). You can encourage children to design their own shapes by giving them blank grids and allowing them to experiment with building up different pictures.

When the children are happy with their designs they can edit the shapes in Logo. You will need to check on the command which allows you to do this, but it is likely to be something like EDIT SHAPE (followed by the number of the shape) or it may be shortened to ED SH. The children then tell the screen turtle to carry their shape (again check the commands to find out exactly how to do this – it may be SETSHAPE followed by the number of the shape).

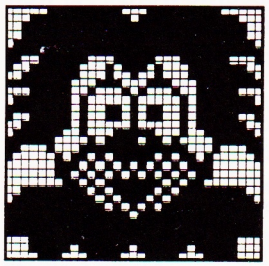
Once the children have successfully managed to change the turtle shape to their own design they can experiment with creating two similar, but slightly different shapes and then asking the turtle to swap between the two shapes to give the illusion of animating their designs.

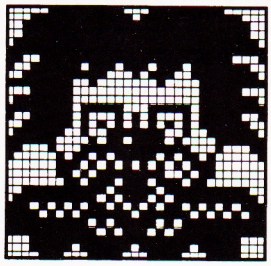
In this example, the clown in SHAPE 1 has been altered slightly to that in SHAPE 2 – his face has changed from happy to sad, his hair style has slightly altered and the ruff around his neck has changed! It is now possible to create a procedure to make the clown animation.

The exact wording of the procedure will vary from Logo to Logo, but it should look something like this:

```
TO CLOWN
SETSHAPE 1
WAIT 1
SETSHAPE 2
WAIT 1
CLOWN
END
```

To make the procedure work you may need to say which turtle you want to change shape, for example, TELL 1 CLOWN. Since this is a procedure which keeps on repeating itself (recursive) you will probably need to press the ESCAPE key to stop it from working. Happy animating!





'Which, what and why now?' A head's perspective on updating hardware

V.J. Randall
Headteacher, Colmore Infant School, Birmingham

Being an Information Technology Co-ordinator at Colmore Infant School was a role I had taken on by default two years ago. The previous and gifted co-ordinator had moved to pastures new and now no-one else felt confident about managing the area so the job fell in my lap.

I had recently become the Head Teacher but found being the IT co-ordinator far more daunting. I had introduced to the school the notion of long, medium and short term planning with the idea that each curriculum area would have a clearly mapped out scheme of work which encompassed elements of differentiation and progression. The only trouble was that I had to produce such a scheme for Information Technology.

I began by involving the Birmingham Curriculum Support Service with training the staff. They sent an advisory teacher to us who patiently and supportively showed us how to use various programs to develop the children's IT skills by working alongside teachers in the classroom.

An outline scheme of work began to be developed but several major issues started to emerge. Firstly, we had a real mixture of computers – two CD-Roms, one 386 and eight 186 machines. It therefore made it very difficult to plan what software should be used and how, when we had such a variety of equipment.

Staff had begun to see the potential for developing Information Technology when they used the CD-Roms but got generally frustrated when they were only able to use them for a short time. We had targeted Information Technology in our School Development Plan and the governing body had approved a level of expenditure which would enable us to buy computers on a rolling programme. However, we realised that to fully equip the school with CD-Rom systems would take several years. This meant that the IT scheme would not be in full operation until then. The budget would not stand purchasing seven CD-Rom machines in one year, but that was what we really wanted to do to enable us to have continuity of approach.

Some time later we came across information about leasing computer equipment. I contacted the local education authority about it and discovered that for the cost of one machine per year I would be able to lease seven with colour printers. The offer seemed to solve all of our problems so it was put to the governing body who approved it enthusiastically.

Several weeks later and we took delivery of seven brand new CD-Rom systems which are now installed in the classrooms. (We also had a visit from NCET TV where these matters were discussed in front of the camera! 'Edited highlights', as they say, should appear in the May broadcast.)

My credibility as Information Technology Co-ordinator certainly rose and at last I was able to write an IT Scheme of work which provided a consistent approach through the school. In the staff's and children's eyes we have certainly got value for money with the leasing scheme as it has made a real difference to the teaching and learning throughout the school.

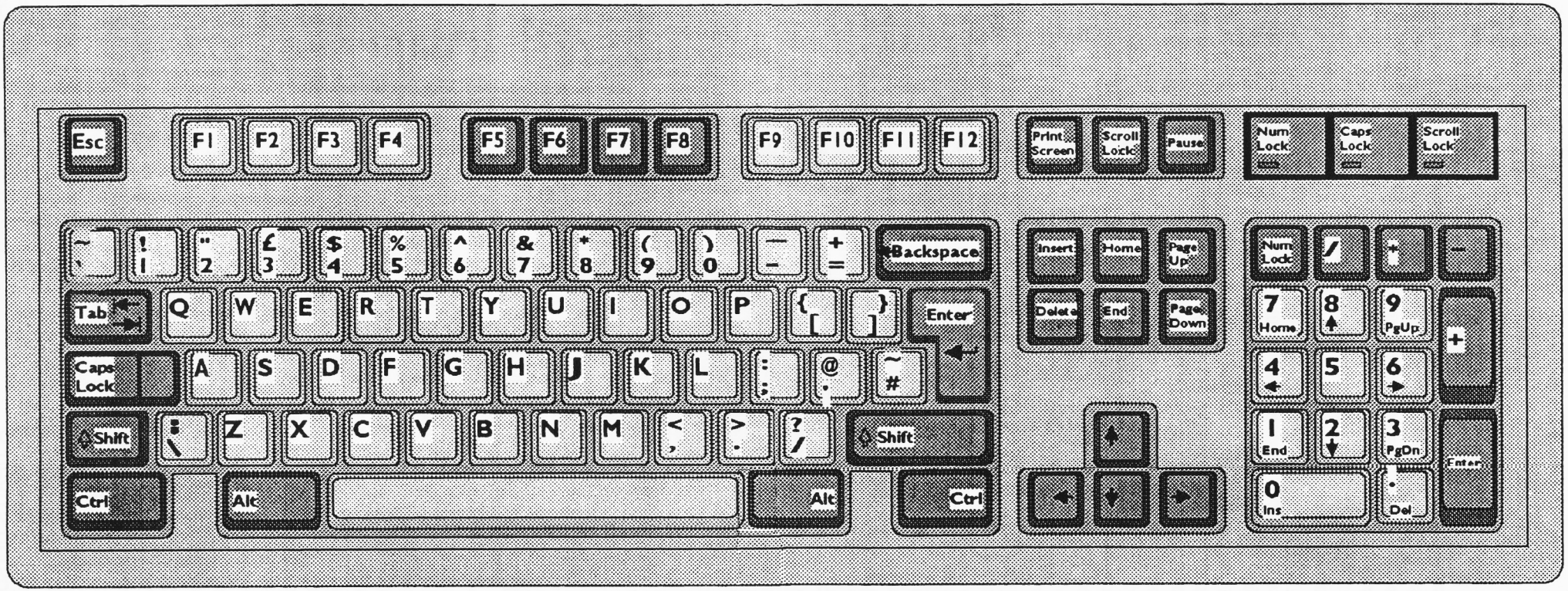
Ten ideas for using a paper keyboard

From *The Woodstock Window*, published by The Woodstock Centre

On pages 20 and 21, we have printed for you copies of a fairly standard keyboard – both for PC (IBM compatible) and Acorn machines for the benefit of colleagues using either platform – together with labels. The ingenuity of Primary school colleagues is such that many have already snapped up copies, and are using them to good effect in their own classrooms.

Below we present some of their ideas – ideas that seem to be having positive effects on children's keyboard skills.

1. The keyboard was copied to a much larger size and put on to a wall display behind the computer. The children wordprocessed labels for the keys.
2. In a Year 1 class, the children were each given a copy of the keyboard and were asked to find out where the letters that made up their name were. Each child coloured in the appropriate letters and then, sitting with the keyboard flat on the desk, tried to work out which would be the best fingers to use for each letter. Not typing as such, but just thinking about two hands and common sense.
3. One teacher keeps an enlarged copy of the keyboard on the computer noticeboard and when she introduces the class to any new functions of the keyboard such as 'arrow keys to move around the text' or 'using the left hand little finger for the shift key', she colours them in and writes a date close by. This then becomes a teaching record to keyboard skills and familiarity.
4. Children have a personal copy of the keyboard and colour in the keys as they become familiar with their functions. This then becomes a personal record of keyboard skills and can be passed on with other records.
5. Copies of the keyboard have been placed on notice boards near computer stations with photocopied hands appropriately placed and captioned with messages such as 'thumbs to space bar', 'right hand pinkie to enter', etc.
6. The keyboards have been used with a Year 5 class who were doing an investigation into the idea that the letters in the middle of the keyboard were the most used ones.
7. The keyboard has been used by children who wanted to be able to type more quickly in order to help them find out the keys for their most commonly used words. They made a little keyboard booklet of words such as 'and', 'the', 'his', etc. Just looking and trying greatly improved their keyboard speed.
8. A larger, simpler version has been used in a Reception class for children to match upper and lower case letters. The lower case letters had been drawn out on card so that the keys could be covered up one at a time.
9. The copy was used at a staff meeting to focus on the idea that there were skills in inputting the QWERTY keyboard that the children should be taught and that it would be beneficial if they could develop some pattern as to the way the children could acquire these skills.
10. *This is your space. When you think of another idea, please let us know so that we can include it next time. Thanks.*



Backspace

Tab

Caps Lock

Escape

Space Bar

Enter

Arrow Keys

Function Keys

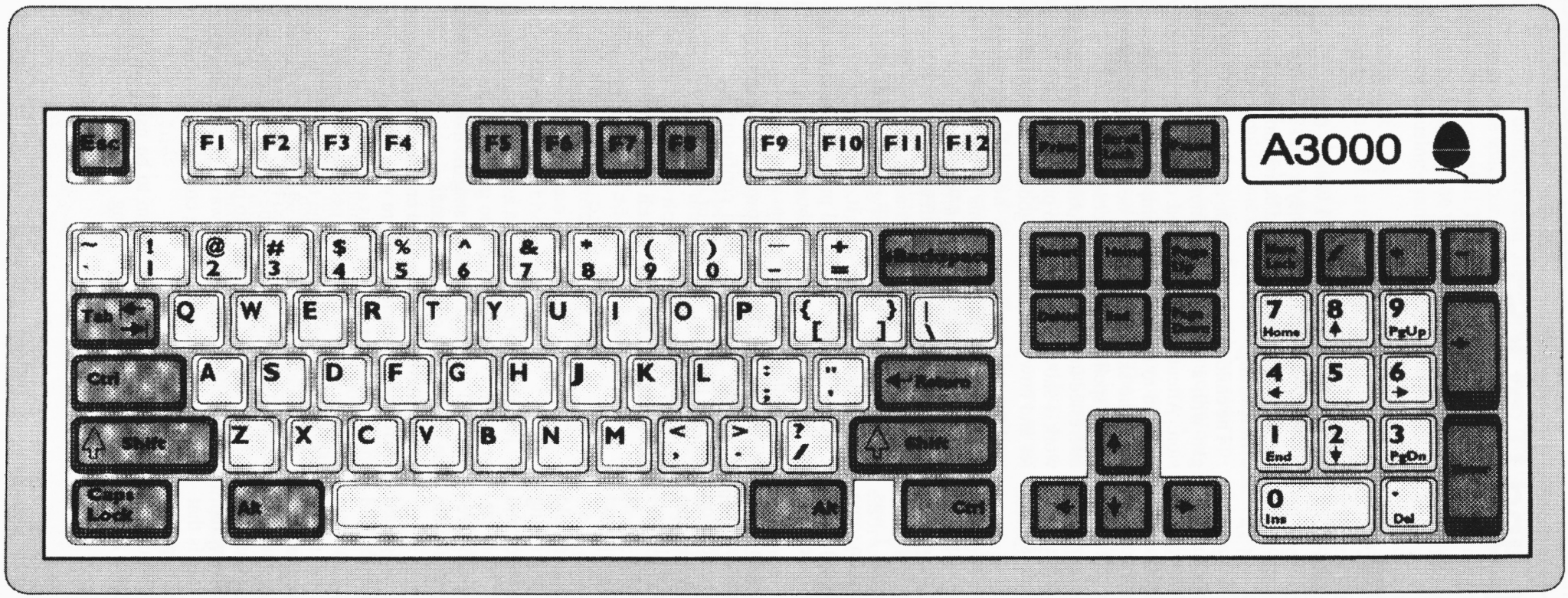
Number Keys

Home Keys

Shift

The Woodstock Centre

The PC Keyboard



Backspace

Tab

Caps Lock

Escape

Space Bar

Enter

Arrow Keys

Function Keys

Number Keys

Home Keys

Shift

The Woodstock Centre

The Acorn Keyboard

all machines except RISC PC and later

Emergent writing and IT at KS1

Liz Walker
School of Education, Sheffield Hallam University

> *'That computer there, miss, I know what it's called, it's called a typewriter'.*
>
> *Sammi*, age 5 years

The innocent comments of a five-year-old sum up a gulf in approach between my generation and the generation entering schools at the moment. This pupil's acceptance of the computer as part of her classroom and life experience, and her historical interest in an 'olden day's' typewriter is part of the culture of schools today. How this acceptance can be harnessed within the modern infant classroom to foster the emergent writing skills of very young children is what began to interest me.

My children are aged five to six years, and they arrive in my Y1 class from their reception classes and with parental input, having already developed some reading and writing skills. As I am interested in the use of 'emergent writing' techniques, I was eager to incorporate into the school curriculum some of my own previous experiences of children using such techniques, and to encourage a more independent approach to writing.

At the risk of over-simplification, emergent writing entails using a variety of print stimulus, a good grasp of phonics and plentiful incentives to develop independent and confident writing skills. Whilst also introducing such approaches into structured play activities, and encouraging children to 'have a go' at writing themselves, I was able particularly to target the wordprocessing aspects of the computer.

The computer I have in the classroom is an old BBC, on which I use the *Prompt/Writer* processing package. I also have access to an Archimedes and *Infant Windows*, but actually find the BBC more satisfactory for my class needs, as the process of preparing and printing writing appears simpler for the children to master.

The classroom is organised around an integrated day which has to be well planned, structured and managed to provide effective teaching and learning, The children are divided into four mixed ability groups and they work on a variety of activities that have been introduced at the beginning of the day, moving round from one activity to the next as they complete a task. It is a fluid and dynamic classroom, with a lot of movement and activity. My role is that of facilitator, checking work, hearing reading, and moving children on to their next task. It would be impossible to be involved in helping pupils at the computer all the time, and I wanted them to begin with the assumption that they could sort out their problems for themselves and be responsible for their own learning.

The children's introduction to wordprocessing began with a whole class demonstration and discussion. Attention was focused on the printer newly attached to their familiar computer! I demonstrated the basic skills they would need, emphasising that correct spellings were not necessary, and that we were interested in seeing if they could make the computer work. I showed them how to print out multiple copies and how it would look good even if their handwriting and spelling was not fully developed. Concentrating on the options 'Begin New Work', 'Continue Writing' and 'Print Writing' I made 'help' posters with pictorial illustrations, put a coloured sticker on the escape key to access the menu, then split the children into smaller groups of two or three and left them to get on with it.

Many children had initial problems with the upper case letters on the keyboard, but the problem quickly diminished. There was an alphabet above the computer with upper and lower cases but I found this rarely used. The main confusion still arises around 'i' and 'I' as shown in Jessica's writing:

```
    i saw a witch
in a tree and the cat
  iaft and I iaft to i
dot iik the witc be cus
shes nashe.
by jessica
```

The ability of pupils to act as teachers and guides was soon evident. Those who grasped from the outset the IT capability of accessing the menu to choose the appropriate option, of loading, printing and beginning new work were soon enlisted to help others. There seems to be much more willingness to do this on the computer, and it is this aspect of independent learning, group support and peer tutoring which can liberate both the pupil and the teacher.

By the end of the term in which I had begun this work, all of the children in the class were able, with varying degrees of support, to produce written work on the computer, and there was a marked improvement in their general writing confidence in other areas of the curriculum.

Observations showed them to be using many of the skills brought from writing. For example, I over-

heard a child using the term 'finger space' every time she pressed the spacebar. However, the children were not always successful! Thomas lost a whole page of writing by pressing the wrong key but produced the following amusing example at a second attempt:

```
I stink bks I did sumsing
rong the frsttaym
```

What I was pleased to see was the independence of this writing. These pupils did not have the confidence to spell words on their own when writing by hand. They would come to me with their word books for the simplest of spellings. The wordprocessor appears to liberate them from this dependence on 'correct' spelling.

In terms of writing development, working with *Infant Windows* was not as satisfactory. The facility to combine pictures and text confused the issue and many pupils were more interested in the picture and using the mouse. However, it was more effective in motivating the least able children. They were more 'at home' in a picture environment.

Pupils show perseverance in the face of confusion and difficulty. They can be overheard trying to sort out the next word or spelling, or reading and re-reading what has been written on screen and adding the next letters and words that are wanted:

S: How do you do 'house'?
N: 'h' 'ow' 's'
S: I haven't got an 'ow'
N: That's it there – that's 'house' – (points to alphabet poster)

The outcome of this perseverance is a page of writing, using house four times, from one of the youngest pupils in the class – and consequently one who has had considerably less time in school than some of the other children.

```
here is a house and
there is some
chldren in the house
  and there is some
granndmas in the
house and the isnt
no dad in the house
a the mummy is in.
                samantha
```

The use of the computer to facilitate the independence of pupils within my class has been extremely effective. There is no doubt that many of these pupils have experience of computers at home, but these are often used for playing games rather than writing.

English in the National Curriculum for Key Stage 1 states:

> *'Pupils should be given opportunities to construct and convey ideas in a variety of forms for different purposes'*,

and Information Technology:

> *'to communicate in a variety of forms, including simple text'.*

It is clear that even the youngest children are capable of mastering this effectively, are not afraid of IT, and are liberated from the physical mechanics of writing and controlling a pencil when using it.

As Marie Clay (1975) points out in *What Did I Write?*:

> *'Before the end of his first year in school the child who is making good progress develops a power to read which outreaches his capacity to write'.*

By utilising the computer it is possible to bridge this gap and allow the fluent readers to express themselves in a way which they find satisfying and involving. The child is in control of his/her own learning. The important role of the teacher has thus shifted when pupils are using the computer and its real effectiveness in the classroom will be much more evident as they become independent wordprocessor users, as they indeed will need to be in their futures.

The computer is one of many resources which I as a class teacher have at my disposal to help and encourage my pupils to become independent writers, but I feel also that it has enabled me to re-examine the way in which I teach, and pupils learn. In this way, I am also reinforcing my belief that the teacher's role in writing must be to encourage and support, but not to be too prescriptive and didactic, to allow children to emerge as writers and to develop the skills and confidence to do so.

Scott's writing, at just five years of age, sums up the independence I feel they have achieved:

```
I went to a witchwts tower nad
I saw a princess she was
shouted for help and I saw her
and I thaught and I faught of
  killing the witchhes then
married her then they Lived happy
ever after.

BY Scott.
```

This is an edited version of original work by Liz Walker as part of her MSc in Education Management, and published with grateful thanks to her and to Sheffield Hallam University.

DTP around the classroom

Mave Wake
Reception Class Teacher, Chilcote Primary School, Birmingham

First attempts

I am not computer literate by any means, but ever since we were given the computer, I have always thought that it might have uses for me too, in my capacity as a class teacher, for more non-curriculum applications. At the moment, we have one multimedia computer in my reception class of 34 four- and five-year-olds, which we use mainly with painting programs, simple wordprocessing, matching and skills programs, and some CD-Roms such as *PB Bear's Birthday*. Particularly for this age-range, I feel it is a powerful – and enjoyable – learning resource for the children.

However, with my Y2 class two years ago, I found that *Paintbrush* had a text option which was useful for printing labels and captions for displays as you can have large, clear fonts which are neat and easy to read. I also wanted the children to be aware of writing produced by a computer as well as writing produced by hand. Not that one is necessarily better, because both have their place.

But *Paintbrush* was not really designed for this purpose and presented us with many problems. Then, about a year later, I watched my husband using a 'desk top publishing' program called *PagePlus* on our computer at home. I soon began to wonder how I could utilize some of these more powerful aspects around my classroom.

Using a desk top publishing program

After some initial discussion and help in setting the templates up, I am now able to produce a variety of worksheets, captions and labels. This did not happen all at once of course, but has built up over many months, as the need arises really.

The Smarties activity and the Book Review Sheet are two samples of some of the worksheets I have also done. Once I understood the difference between 'landscape' and 'portrait' arrangements, I made some large A4 labels to go on the classroom door and cupboards, and to go with the Gingerbread Man displays along the corridor. Now I have smaller named labels for the children's coat pegs, art and craft work (particularly useful when a whole class set has been produced), for drawers and folders, and labels for block graphs, sets and other data handling activities.

Why use DTP?

It does take time: time to learn how the program works and what it can – and can't – do, and time to experiment and see what it would look like it if you did this

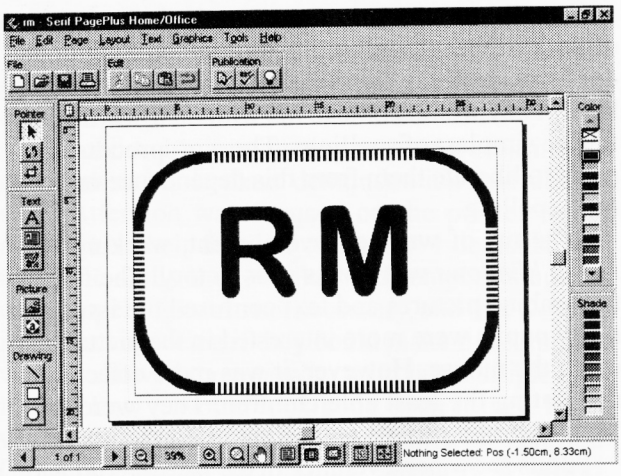


Fig. 1. *A first attempt at a classroom label.*

bigger or put that over there. But I have found that the time spent pays off. Once the worksheet or label is done, and saved, it is very easy to copy it or change the names, or even print it out again next year. I am not an artist, but at least the ability to correct mistakes and amend the work, makes Tippex redundant

In the classroom, from an organisational point of view, quite a few of the 34 children in my class need some time to write their own names and, particularly when writing their names is not a major aim of that activity, it is quicker and more responsive to label their work there and then.

With the copy and paste options you only need to design one label. I usually have a good idea of how big I want it first, play around with borders and fonts till I get something that looks all right. Then I work out how many I can fit to the page at that size (and sometimes you have to compromise here), add the guidelines and copy as many labels as will fit to a page. Luckily, *PagePlus* has a 'snap' facility which makes the label 'jump' to the nearest guideline and keeps them all well spaced.

Once the format is done, it is quite easy to change the data, by deleting and retyping. In this way, I can add names of new children, or put the names of my new class in quite quickly. Or use the same layout for numbers, colours, days of the week, common words etc.

Also, as well as looking more presentable, printed worksheets often photocopy better than hand-written ones. They can have a regular consistency about them too, which is useful. Mine are only in black and white, but we have not got a colour photocopier anyway.

The next step I am wondering about, is how best to use *Clipart* and bring in lots of simple pictures. But with OFSTED coming up, that's for later.

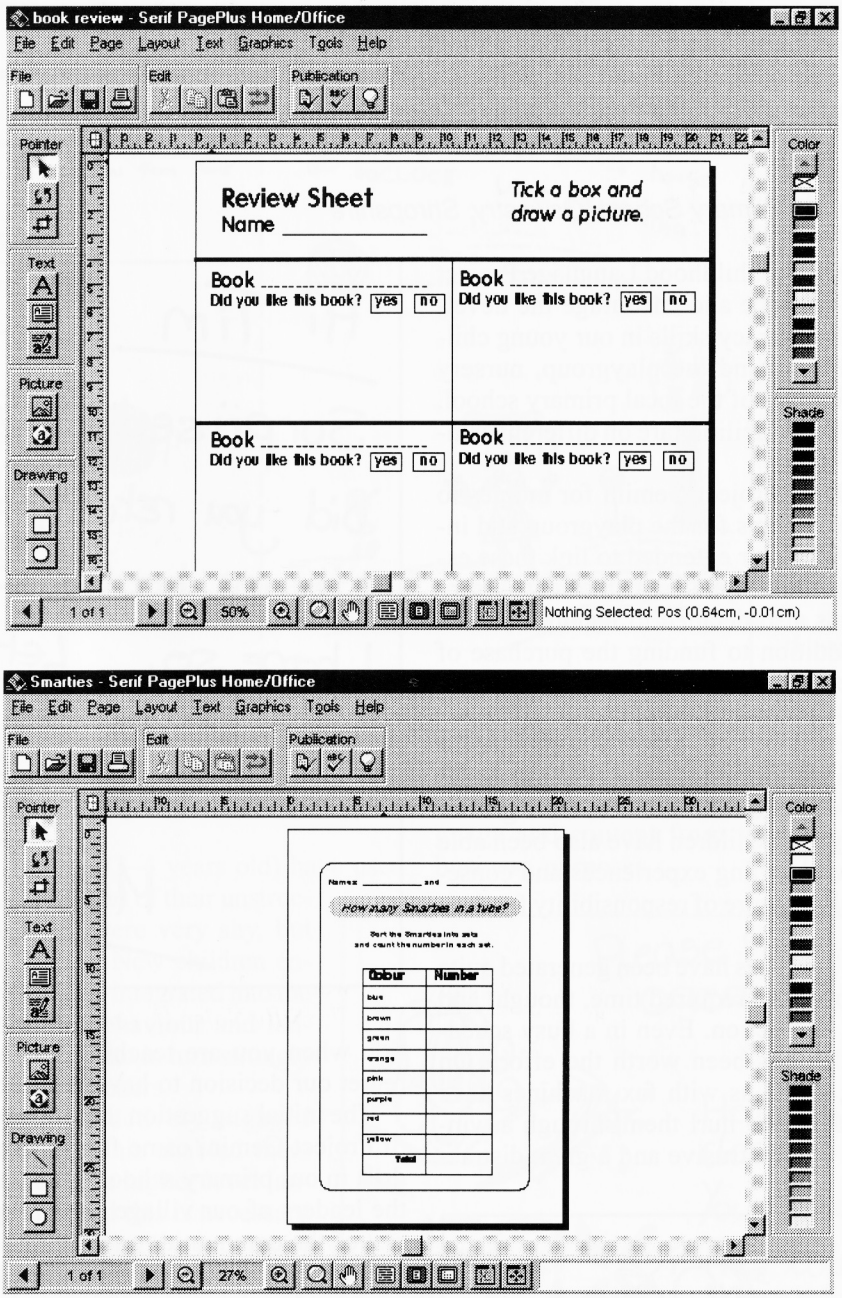


Fig. 2. *Two sample DTP worksheets.*

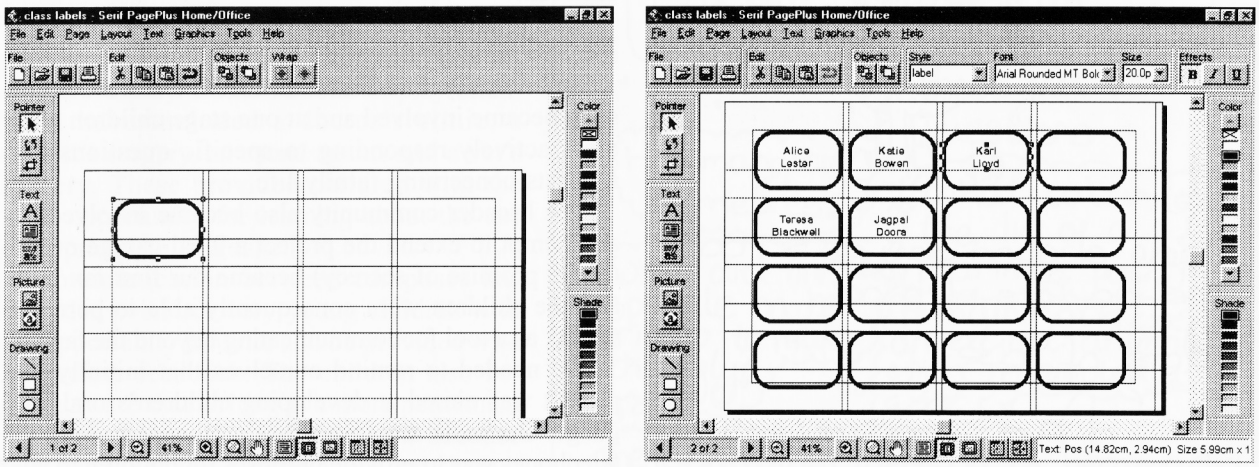


Fig. 3. *Once you have designed one label, you can copy and paste as many as you need.*

The Weston Rhyn fax fairies

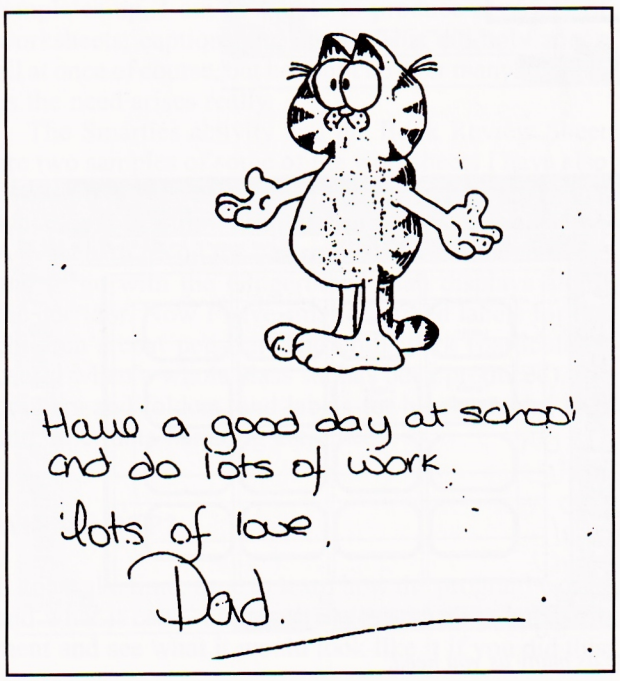
Rosemary Boys
Weston Rhyn County Primary School, Oswestry, Shropshire

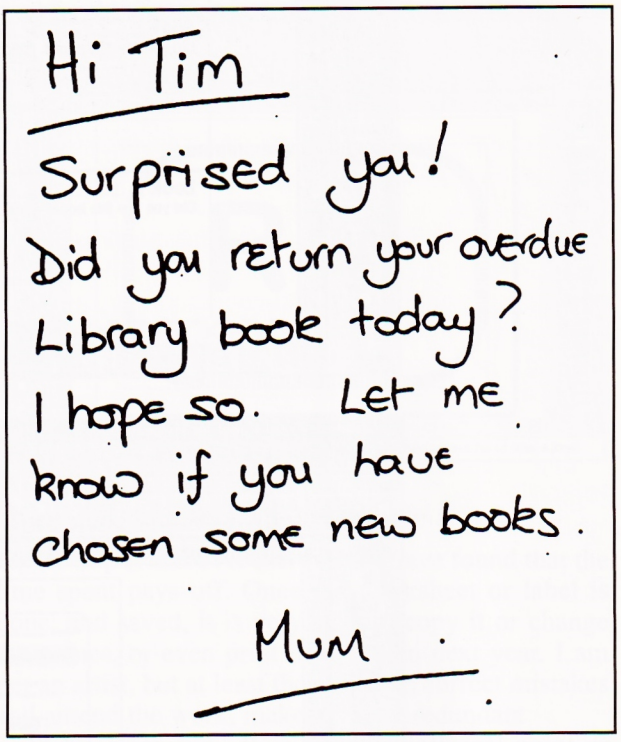
The Weston Rhyn Early Childhood Language Project was developed to enhance and encourage the development of oracy and literacy skills in our young children. These children attend the playgroup, nursery school and infant classes of the local primary school. Unfortunately, all these facilities are on different campuses.

We applied to BT's Project Gemini for monies to purchase intercom systems for the playgroup and infant classes. This was later extended to link these establishments by fax and telephone. As the new nursery was opening, it was also decided to include them in our network. In addition to funding the purchase of equipment for the school, Project Gemini staff also provided us with support and training.

Our involvement with the project has enabled us to extend learning experiences beyond the usual boundaries and give children tasks with a far greater purpose and reality. The children have also been able to initiate their own learning experiences and consequently gain a small measure of responsibility for their own learning.

Although some activities have been generated quite spontaneously, most have required time, thought and effort to put them into action. Even in a busy schedule we feel that this has been worth the effort. On several occasions, all of us with fax machines have resisted a strong desire to hurl them through a window. They can be quite intrusive and a great distraction when you are teaching, but none of us would regret our decision to have them in our rooms.





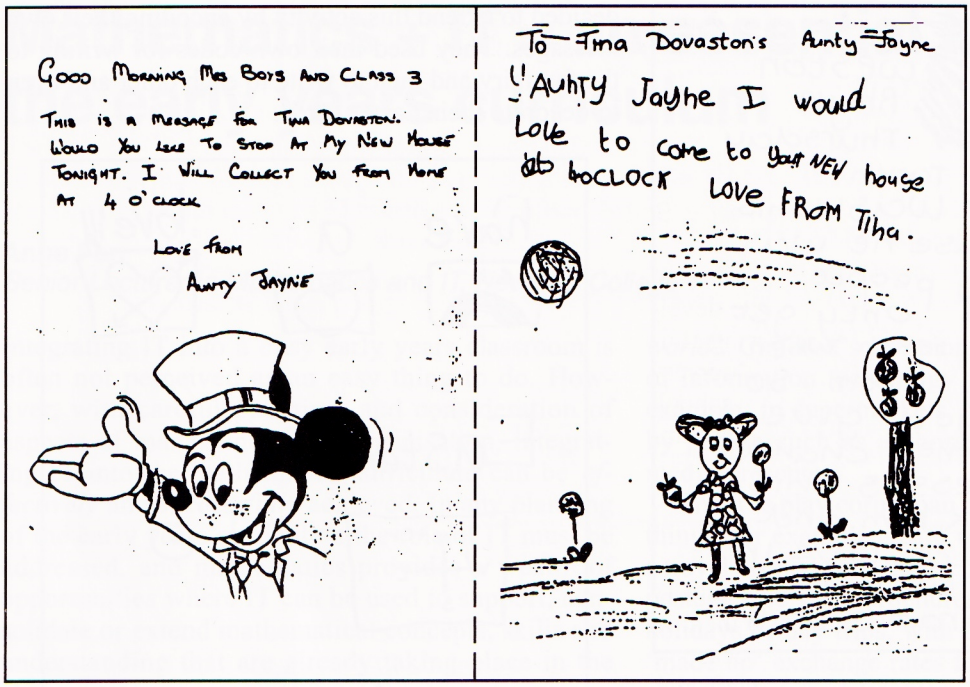
The initial suggestion that we apply to become part of Project Gemini came from the parent of two children in our primary school. This parent is also one of the leaders of our village playgroup. Parents and the rest of the community traditionally provide us with a rich variety of learning experiences on all three campuses and at the outset of our project we encouraged our parents to use the fax to send greetings to their children.

This gradually developed to messages requiring a response from their children.

Other family members with access to fax machines soon became involved and at one stage children were quite actively responding to specific questions and requests concerning family life.

The broader community also became involved. In an attempt to extend the project a local garage owner (under promise of secrecy) became our first fax fairy and the children were consequently able to perceive the fax as a tool for communicating beyond the family.

We needed to remind ourselves that initially our project was aimed at developing children's oral language. Our main aim in purchasing the intercoms and telephones was to provide purposes for children to talk



The main writing tasks undertaken by the older children have been letters. These have been written for a wide range of purposes which include: thank-you letters (e.g. to a library van for special books); invitations (eg. to visit schools for a special assembly or sports day); requests for information (from a travel agency); letters of welcome (to other project visitors) and familiar letters (to friends and families).

Through writing these letters, children have become very familiar with the text organisation of letters and have developed an understanding of the register of letters. They are aware that letters written to friends and family have different language and content from those sent to officials for business purposes.

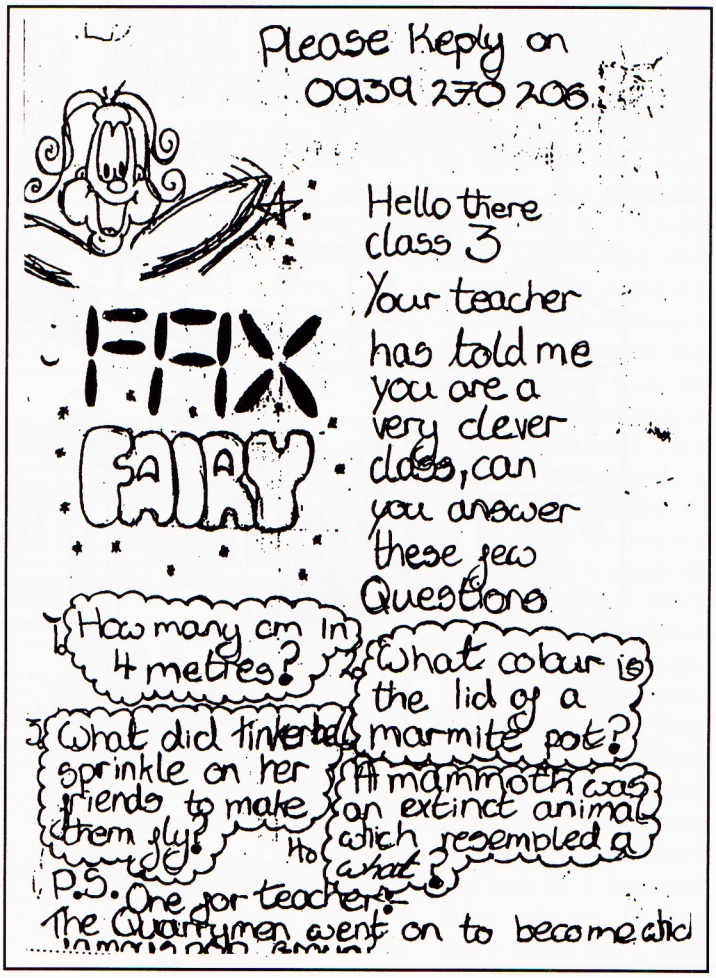
within a meaningful context. The uses of talk identified by Joan Tough were used so that we could both plan experiences and then assess the language that the children were using.

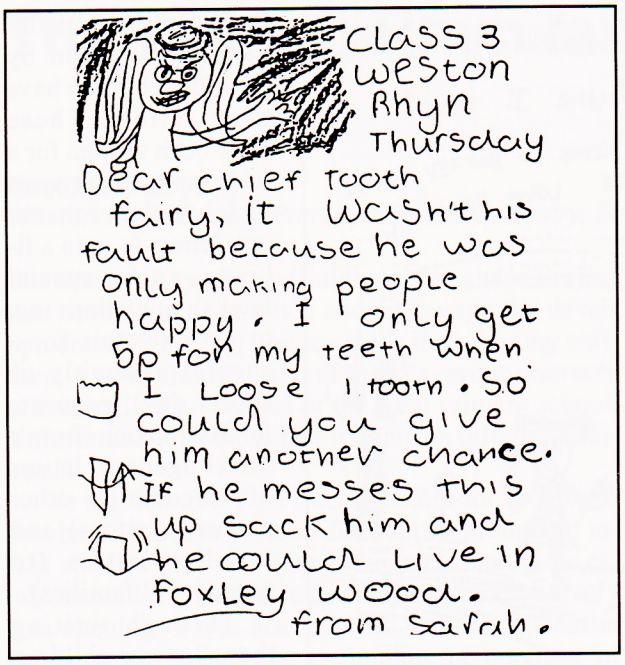
The playgroup children (3–4 years old) have used their equipment mainly as part of their unstructured play. Initially they were very shy, but soon gained in confidence. New children entering the playgroup quickly integrated into the group and modelled the behaviour and language of their older peers, who in turn strongly model their parents and teachers.

Playgroup leaders also actively engaged children in conversation. This enabled them to encourage children to use higher level language skills. We have found this is necessary at all levels since children rarely encourage their peers to directly predict, reason or project. Their focus is much more on self-maintaining and reporting or recounting their experiences.

In the nursery and reception/Y1 classes the equipment is used for both structured and unstructured play. Some structured play situations have included a doctor's clinic, a dentist's surgery, an estate agents and a vet's surgery. These provided children with the ideal opportunity for learning about the use of appropriate language.

Communication between campuses has provided even our very young children with the opportunity to write and be provided with immediate feedback. The children also become aware that writing is a more permanent form of communication than talk because they can take their writing home and share it with others.

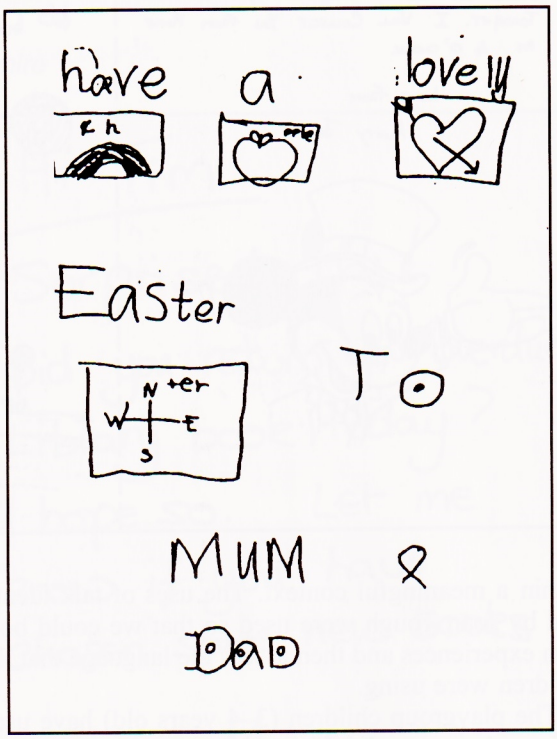




Whilst all children are encouraged to redraft, for some children this is an enormous task when they have already expended great thought and effort into their first draft. Where there is evidence of this effort and the child and teacher agree that the letter is meaningful, the letter (and its errors) will be sent.

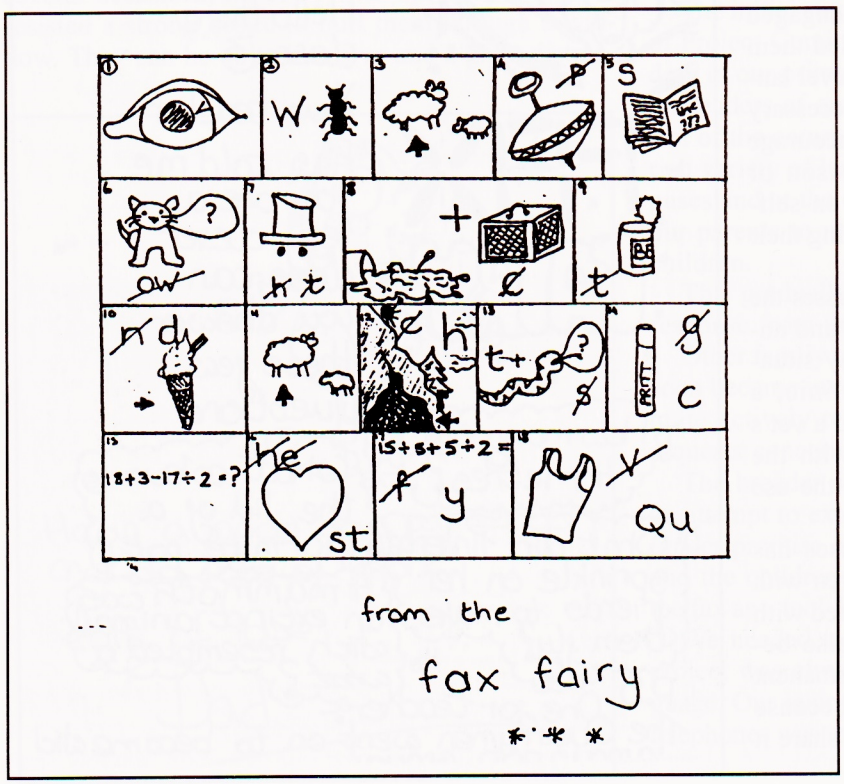
Perhaps one of the most interesting activities generated by the fax involved the receiving of a picture code. Decoding this code entailed a great deal of skill using both problem solving strategies and linguistic knowledge.

Once the text was decoded, children themselves decided to extend this activity by encoding their own messages. They used their own codes for writing to the fax fairy and then to write to each other and even to decorate their Easter cards.



Our main aim in taking part in Project Gemini was to purchase equipment that would enable us to provide purposes for the children to develop oracy and literacy skills. We feel that this has been achieved on all campuses. The equipment has given children opportunities they would not otherwise have experienced. We now have to find ways by which we can maintain the use of all the equipment beyond the life of the project.

The oracy aspect of the project can be continued indefinitely as the cost of running the intercom equipment is minimal but the literacy part of the project using telephones and faxes will be more difficult to sustain. We shall need to consider carefully how we can pay our telephone bills but we shall make every effort to keep the work going. Our children have benefited so much from having access to the equipment that we would be very reluctant to deny any future intakes the range of experiences that we know are possible.



This article is an abridged version of the Weston Rhyn Early Childhood Language Project Report.

Mathematics + IT = an essential factor in the early years curriculum

Anne Farr
Senior Lecturer in Mathematics and IT, Newman College

Integrating IT into a busy early years classroom is often not perceived as an easy thing to do. However, with careful planning, and consideration of aspects of management and organisation, integrating IT into the mathematics curriculum can be *effectively* and *successfully* achieved. In any planning of the early years curriculum the role of IT must be addressed, and mathematics provides a wealth of opportunities where IT can be used to support, consolidate or extend mathematical concepts, skills and understanding that are already taking place in the classroom.

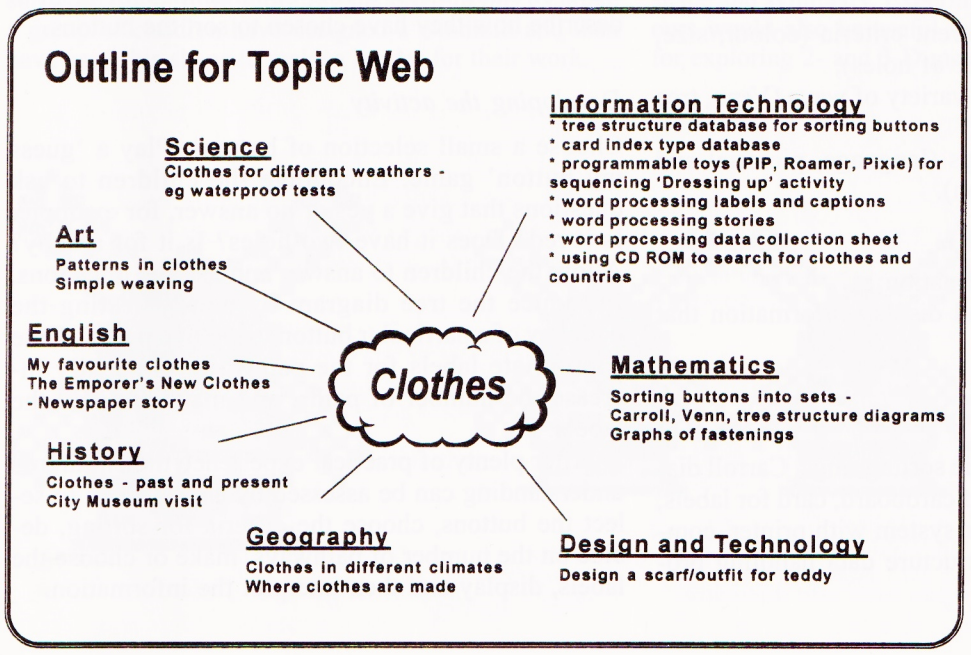
In any preparation for the effective teaching and learning of mathematics we have to clearly identify the learning objectives we wish the children to achieve. The provision and management of stimulating resources to support the children's learning is all part of the 'good practice' seen in so many early years classrooms. Information technology, whether computer systems, programmable toys, or calculators, has a valuable contribution to play as a powerful resource to support mathematics and to develop children's IT capability.

In the National Curriculum Key Stage 1 programmes of study it states that '*pupils should be given opportunities to examine and discuss their experiences of IT and look at the use of IT in the outside world'*. Children's attention can be drawn to the use of information technology in the 'real world' – for example, in supermarkets, banks, travel agents, and by people such as authors, doctors, designers and media presenters.

The role play corner can be transformed into many things, for example a café with calculators and a till, a travel agents' with 'home produced' wordprocessed posters, labels and brochures to show costs, length of holidays or day trips, with flight or coach times and 'made up' exchange rates for different currencies.

Calendars and booking forms, (prepared on the computer by adults – ideas by children!) can be used to record the information. Or perhaps a newspaper office with children designing adverts and articles, or a baby clinic where teddies and dolls are measured and weighed on electronic scales and records kept.

Poems, rhymes and stories are widely used in the nursery, play groups and infant classrooms, and these can provide a wonderful source for practical mathematical activities which will stimulate children's interest and promote positive attitudes to mathematics from an early age. In distinguishing the mathematical focus for the poem, story or rhyme the next stage is to think how IT can be integrated. For example, 'The Three Bears' story can be supported by a 'Dress the Teddy' program to develop sequencing and counting, or a survey of children's favourite breakfasts where the information can be collected and stored in a database and then graphs presented to show the findings.



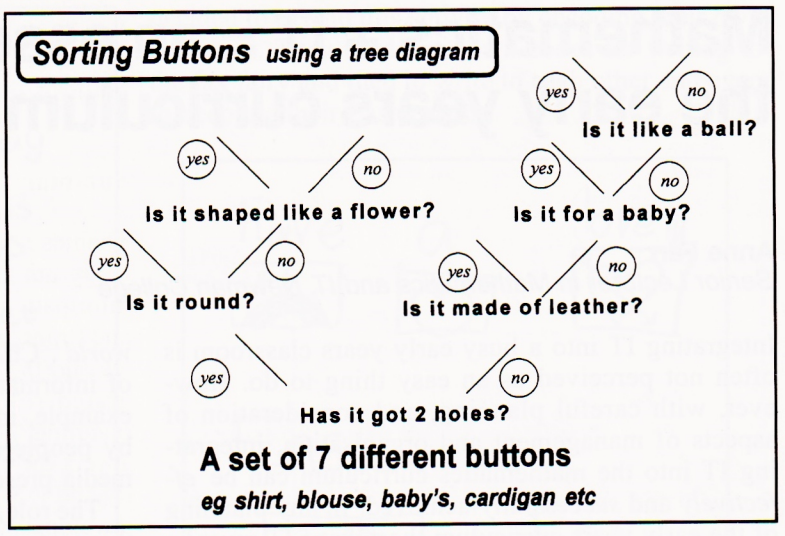
Themes or topics can be used to promote cross-curricular work and encourage children to 'use and apply mathematics' in other subjects. For example, 'Ourselves' might include aspects of measure and number – how many shells can I count into my box in 1 minute? How tall am I? Are there more boys than

girls with cats as pets in our class?

Children are surrounded by IT-handling information: in shops, traffic signs, home, and favourite fast food outlets. The level one descriptor for Information Technology in the National Curriculum requires pupils to '*explore information held on IT systems showing an awareness that information exists in a variety of forms*'.

So IT into maths – will go! But there is still the problem of 'how do I start?', and 'how do I develop the activity to enhance children's learning of maths and develop their IT capability?'.

In planning for a theme on 'Clothes', I would devise a topic web to show subjects of the curriculum that will be addressed, with focused activities and references to the National Curriculum programmes of study where appropriate.



Mathematics focus

A key step for the development of information handling in mathematics is sorting into sets according to different criteria. As an example, for the topic on clothes an idea would be to look at the way our clothes fasten, with further work focusing on different types of 'buttons'.

Strategies for planning the activity might be as follows:

Identify the learning objectives:

Mathematics

- to sort buttons into two sets where one has a particular attribute and the other does not (round, not round);
- to sort sets using different criteria (colour, size, shape, material, number of holes);
- to display the data in a variety of ways (Venn, tree and Carroll diagrams);
- to interpret the findings (language, pictorial and symbolic representation).

Information technology

- to enter and store information;
- to retrieve, process and display information that has been stored.

Resources required

Selection of buttons, plastic sorting rings, Carroll diagram cards, large pieces of cardboard, card for labels, felt tipped pens, computer system with printer, computer paper, and a tree structure data handling program.

Group size

The introduction can be to a large group, and the IT activity organised with a smaller group, with perhaps an adult helper.

Making a start

Many activities can begin 'away from the computer'! After seating the children in a circle on the floor, tip out the buttons and ask the children for ideas of how the buttons can be sorted. Encourage the children to describe the buttons: What colours are there? How many shapes can they see? What are the buttons made of? How many holes do they have? Do they all have holes? Are the buttons different sizes? What sizes are there? Is the button for an adult, child, or baby, or suitable for a male or female? Encourage the children to sort the buttons in different ways. Show and explain how to use the plastic sorting rings and Carroll cards for sorting. Allow children time to explore different ways of using these, giving opportunities for them to describe how they have chosen to sort the buttons.

Developing the activity

Choose a small selection of buttons. Play a 'guess my button' game. Encourage the children to ask questions that give a yes or no answer, for example: Is it red? Does it have two holes? Is it for a baby? Allow the children to answer and ask the questions. Introduce the tree diagram by demonstrating the pathway of a particular button using two paths. Write appropriate labels for the pathways. Gradually increase the number of paths, and make and add the labels.

After plenty of practical experience the children's understanding can be assessed by asking them to select the buttons, choose the criteria for sorting, decide on the number of pathways, make or choose the labels, display and then interpret the information.

Integrating Information technology

At this stage the children can be introduced to a tree structure database, for example *Sorting Game*, *Branch*, or *Wintree*. With very young children it is advisable to make a file using the familiar objects and go through the activity. Children can then be encouraged to use the buttons to insert their own data, make a file and then use it.

Extending the activity

The National Curriculum for Information Technology states that *'pupils should use IT to sort and classify information and present their findings'* (level 2). The children could carry out a survey to find the number of different fastenings on their clothes. Data could be collected and inserted into a 'card index type' database and graphs produced to present their findings, to look for comparisons, or to test a hypothesis, for example, 'Most clothes are fastened with buttons'. The results can be used to prove or disprove the hypothesis.

Summary

Themes and topics with which young children are already familiar are ideal starting points for developing information handling, for example, 'pets', 'ourselves', and 'transport'. The 'using and applying' of mathematics and the development of IT capability can be integrated readily into these if careful and thorough planning has been involved. Young children readily accept the computer in the classroom as another activity and it is up to us as 'educators' and 'facilitators' to develop children's IT use appropriately and effectively in their day to day learning of mathematics.

Yes: maths + IT = an essential factor for the early years curriculum.

Mosaic patterns and pictures

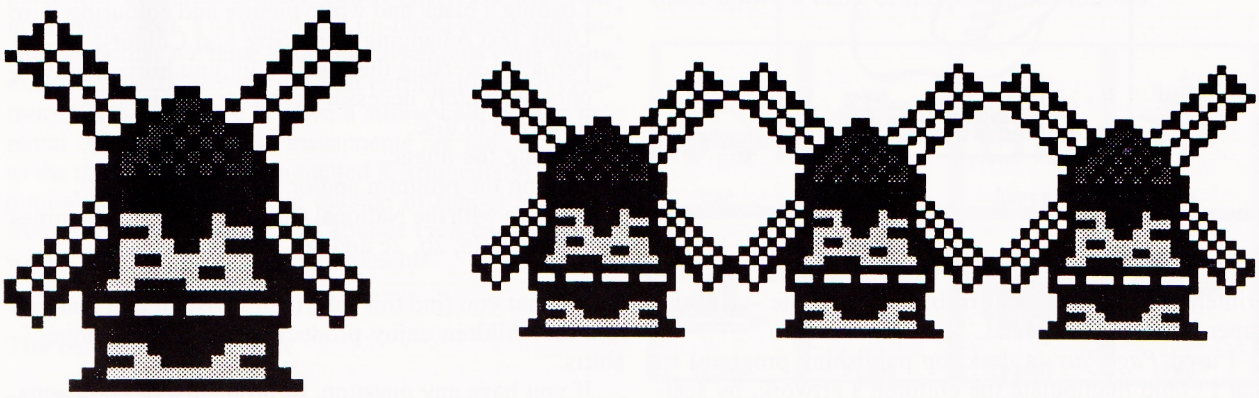
Janice Staines
Senior Programme Officer, NCET

Using programs like *Mosaic* or *Tiler*, children can design their own titles based on a grid. Many programs will allow the user to specify the size of their grid. Younger children might be best using a simple grid to experiment with before tackling more complex designs. If you do not have a special tiling program available you can use other graphics programs to design a grid for your children to fill with colour.

When the children are happy with their designs they can make them form repeating patterns. In this example a group of children have designed a windmill and then have used this shape to make a border for their work.

As an extension to this activity the children made clay squares (about 2 cm^2) and painted them to match the colours of their design. They first counted how many of each colour they needed, and when the paint was dry they built up their windmill in clay squares. Once they were satisfied that their design was right they glued their tiles onto a wooden base.

This would be a useful activity to adapt for a history topic or can be used to develop mathematical ideas of shape and symmetry. Experimenting with a range of colours would also be useful for developing art ideas and for exploring 2- and 3-D media.



Producing an image and transferring it onto a T-shirt

Mick Harwood
Headteacher, Blakenhale Junior School, Birmingham

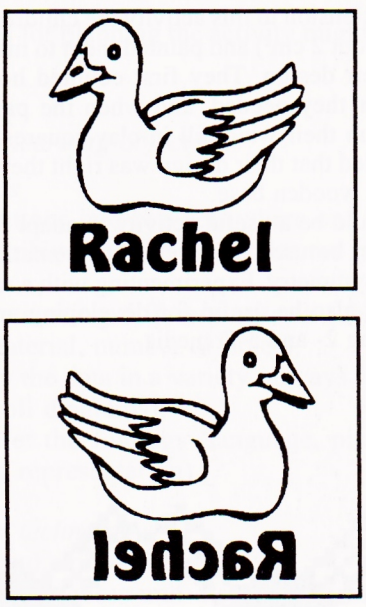
The whole process is quite simple and can be split into three parts:

- draw a picture using a computer drawing package;
- print the picture onto special paper to produce an iron-on transfer;
- iron on the transfer.

The drawing process

The children can either: load an existing piece of *Clipart*, and simply use that or adapt it (perhaps by personalising it with their own name and experimenting with font types, sizes, and colours), or draw their own picture.

Because what we want to produce on the special paper is effectively an iron-on transfer, it is often necessary to reverse the image before printing. This is vital if what appears on the T-shirt is to be exactly what is seen on the screen (i.e. *not* a mirror image), and, of course, it is crucial wherever text is involved, as in the example.



The printing process

This is exactly the same as with the normal use of a printer, whether in colour or black and white – it is the paper itself that is special.

I used *PagePlus* (a desk top publishing program) so that I could manipulate the children's artwork, by scaling it and then fitting at least two pieces of children's work onto a sheet of A4 paper.

The ironing process

N.B. This *must* be done by an adult as it involves using a very hot iron.

Read and follow the ironing instuctions that are sent with the special paper. It is always a good idea to practice with some spare transfers and some old pieces of cotton before actually starting on the children's designs and T-shirt!

Materials used

Computer: We used a PC.
Art program: We used *PaintBrush* which is supplied free with Windows.
Special paper: We buy our papers and T-shirts from: Power Point Communications, 3 The Greaves Way, Bishops Itchington, Warwickshire CV33 0PY, Tel: 01926 612 848.

Prices at the time of writing are £39 for a packet of 30 sheets of the special paper. The T-shirts cost £1.65 (excl. VAT) each when purchased in tens, with a 10% discount with orders of over 100.

Considering that between one and four decent-sized pictures could be fitted onto one piece of A4 paper (depending obviously on their size), this actually makes the production cost of a T-shirt between £2 and £2.95. There is, of course, also the running costs of black, and colour cartridges for the printers to consider!

The IT capabilities for the child include some of the following:

- Opening a window and/or a suitable program;
- Drawing a picture *or*
- Loading a black and white picture and colouring it in;
- Using text (changing Font, Size and Colour);
- Perhaps reversing the image (flipping horizontally) – only absolutely necessary when text is involved;
- Saving it to disc;
- Printing the image;
- Closing the program and/or window.

These fit in with the National Curriculum IT programmes of study 1b, 2a, 2b, 2c and 2d.

I hope that you find this information useful and that you and the children enjoy producing your own unique T-shirts.

If you have any question, or problems, or comments, please contact me at the school address given above.

Happy printing!

The computer as a musical performer

Dr. Andy Pierson
Expressive Software Projects

Music in the curriculum

Music is found in all aspects of our society from leisure through to commerce and its effects are often emotional and sometimes dramatic. Music is an essential part of life, having a major impact on the quality of life.

Its importance in our education curriculum has been recognised to varying degrees over the years. It is placed as a performing art alongside the more passive graphic arts and as a medium of expression alongside reading and writing and other language activities. However, when it comes to musical activities in the classroom it is often relegated to being a poor relation behind other subjects. We find music appearing purely as a performance activity with a view to improving the quality of school assembly singing or an end of term production.

There are some important reasons why music should be given a much higher profile:

- firstly, music can provide a way of revealing and expressing our feelings in a way which language cannot always do;
- secondly, music can be a powerful medium for developing other areas of the curriculum;
- thirdly, musical ability is exhibited by a vast majority of pupils and when done so successfully is often highly rewarding and powerfully motivating.

The 'problem' with music

However, there is one major problem associated with music. That is: it requires performance to actually hear the results of a musical decision. It is this performance on what are regarded as highly technical instruments, with the mystery that often surrounds stave notation, that prevents many teachers and pupils taking an active role in music in the classroom.

There are, of course, many activities that can take place with instruments that require much less initial training to use them. The tuned and un-tuned percussion instruments that we have available to schools offer many exciting possibilities for musical participation and creativity. However, there is often a strong cultural and parental opinion that these instruments are not 'as good' as the more technically orientated instruments. Also, the pupils' contact with music outside of school is drawn from a much wider range of sounds than can be made with traditional classroom instruments.

The computer and music

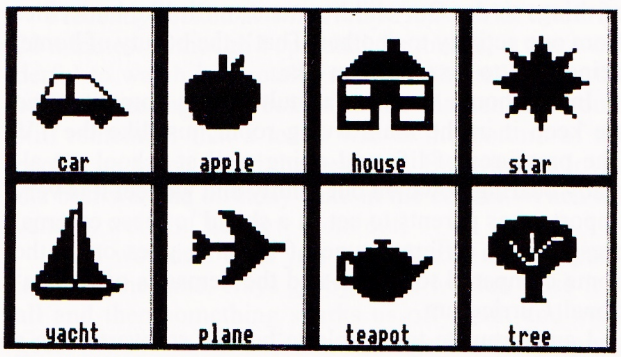
The computer has some potential to help here. It can perform music with a high degree of accuracy and using a vast range of musical sounds and structures. We immediately arrive at a point of concern. Traditional music education revolves around human performance with the aim of developing skills that can lead to participation in music making. The act of close involvement with instrumental technique is seen as having a crucial importance. However, at the same time it is this need to perform that becomes a barrier to many being involved.

In some recent research I have observed that the computer need not been seen as a threat in this way; quite the reverse. By using it as a performer of technical musical skills we can open up opportunities for children to explore, create and develop high order skills. This is because children are naturally musical. They are not, however, always given the opportunities to show it.

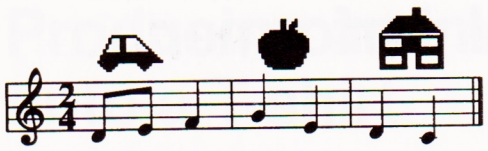
George's musical composition

I recently observed a five-year-old using the computer program *Compose* to write a short piece of music. *Compose* presents a number of short phrases of music and these phrases are represented as words or pictures. The user can hear each phrase and form the phrases into a sequence. They can use the phrases in any order and combination and listen to the individual phrases or the sequence at any time.

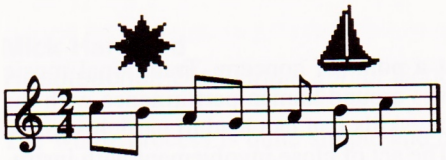
George had used *Compose* before. His earlier encounters had been mostly to go through the various files and to listen to the effects of using all the pictures from the available selection. On this occasion, however, I asked George to make a sequence that 'pleased' him. The resulting composition was completed quite quickly but in the process two important factors emerged. The first was that he had no problem in making musical decisions and in doing so was quite happy to reject combinations that did not 'work' and try alternatives. Secondly, he set his own criteria for selecting the phrases and his own language for describing it. The result was a composition made up from eight of the phrases as follows:



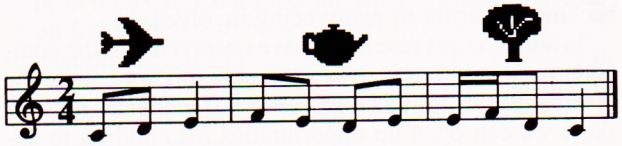
The pupil described this composition as having three 'Rhyming' sections as follows:



First rhyming section



Second rhyming section



Third rhyming section

Although George was unable to explain why he thought they 'rhymed', we can see that each rhyming section contains a series of 'flowing' notes with small musical intervals and that each section had a western style ending. More important than the possibilities of revealing underlying musical skills is the fact that the computer provided the medium for this activity to take place.

Music and the classroom computer

The computer, with its ability to manipulate and organise high quality sound, provides the professional musician with a powerful and versatile resource. It also provides the young pupil with new opportunities to handle and control music in a way which I find very exciting. With a classroom computer connected to a musical keyboard or synthesiser a whole orchestra of sounds is made available. These sounds can be accessed through well-designed software and allow the pupils to listen to important musical concepts and develop skills which will help them work with traditional musical instruments should they wish to. At the same time they are developing a number of skills related to language and mathematics as they verbalise and analyse their music-based activity.

Whenever George meets me he wants to play me his composition – something a live performer is often too self-conscious to do for fear of making mistakes. He hasn't yet written any words to it or added a live percussion accompaniment but he is well motivated to do so. However, there are other areas of the curriculum that need his attention, too . . . !

What do we do at home with our computer?

A personal view

Angela Best
Senior Programme Officer, NCET

Life with a six-year-old and two-year-old is very enjoyable and at times very chaotic. As parents we try to follow our children's interests. Books, toys, painting, television and videos all play a part in their lives and the computer is now part of this environment. With young children like ours, it's all about having a variety of things to do. Our children tend to flit like butterflies from one activity to another. That's the beauty of home: being able to do what you like.

In our home we have a multi-media computer and we keep it in the main living room, just like the TV. The pressures of life and doing well at school are already bearing down on our family and we feel it is very important as parents to act as a shield to these external pressures. A different type of learning goes on in the home compared to school and the demands of the National Curriculum.

I am fortunate to be able to borrow software from a library collection and whenever we get a new software title, Paul aged six, and I explore it together. Ideally I would like to have looked at it beforehand but the reality means that I don't. Paul wants it to work immediately and I often have a wriggling two-year-old on my knee too. I don't have the time or the desire to read a manual from cover to cover and so I find I need software which is easy to use, with clear screen prompts that I can interpret as we go along.

I don't just switch the computer on and leave Paul to it. I wouldn't leave him to figure out how to make a meccano model or read a picture book on his own, so the same applies to the computer. However Paul, who has been using the computer since the age of three, is now quite confident when using certain packages. I have noticed that even with a new title, it is not long before he is whizzing along without needing me at his side every minute. A typical scenario with, say *Kidpix Studio*,which he knows very well, will be to switch on the computer and he will do the rest – loading the CD-Rom, choosing where in the program he wants to go and then eventually printing.

A colour printer is essential for Paul to see what he has created on paper instantly and I love his smile of

pleasure at the results. He has been using *Kidpix Studio* since he was three and it is wonderful to see how he has developed computer literacy while just having fun. More than just loading a program, he can find his way around the different sections quite easily on his own.

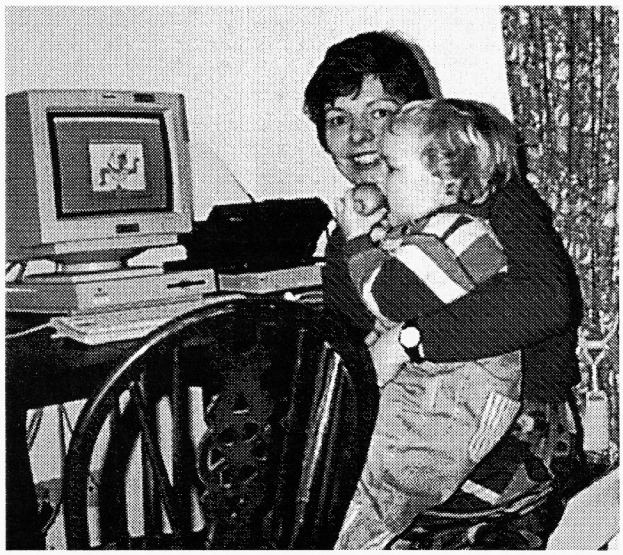
We recently have looked at *Storybook Weaver* and he quickly got the idea of how to choose the background for his story and certainly didn't need any hand-holding from me. Paul is a boy who loves writing and drawing and seems to always have a pen and paper in his hand. This program is another way he can write and draw and at the same time release his fingers from the manual effort. At the moment he is more concerned with creating interesting backdrops, but that's fine. I am only providing the program for what he wants to do, not teaching an English or Art lesson!

Once I feel Paul is happy with what to do, I often slip away to get on with one of the hundreds of things to be done around the home. However, what I try to do is to be near by and be ready to drop everything if a problem occurs. I also 'pop back' every now and then to see what he is doing and show interest and give praise. All this is no different from him painting in the kitchen (but less messy) or digging in the sand pit.

However the best times are when I make time to stay with him and just get involved with the activity. Like all things that children do – if you join in with them then a good event can turn into something very special. We are learning together.

In the early days, when Paul was three, we looked at several stories on CD-Rom. Paul never wanted just the story reading to him, he always wanted to interact within the story. *Tortoise and the Hare, Just Grandma and Me* and *Arthur's Teacher Trouble* were firm favourites then. At the moment these do not hold his attention like they did and he prefers CD-Roms which let him be creative like *Kidpix Studio* and *Storybook Weaver*. I feel these storybooks should be borrowed rather than bought as they are expensive. There is a great need for public access to these resources along the lines that children's library books can be borrowed. These multimedia storybooks have had a great impact on our family but we need to have access to a wide range of titles rather than just a few.

However there are always exceptions to the rule and always something new and exciting on the horizon with CD-Roms. *Where in the world is Carmen Sandiago? – junior edition* is such a title. This wonderful detective



programme takes Paul all over the world solving mysteries and catching thieves. He loves it and is learning about other countries and cultures at the same time. But it's the idea of being a detective which has grabbed his interest and the geography is incidental. *Darby the Dragon* has also moved Paul on, by offering a story but with a difference. This CD-Rom is a 'solve it yourself' story with lots of layers where games and clues are set within the context of the adventure.

We mustn't forget our two-year-old, Mark, who is seeing the computer used even earlier than Paul did. He knows what one is and he accepts it as being part of home and his life. If he were an only child I would be happy with just that. However, he sees his older brother using it and dashes from anywhere in the house if he hears the computer being switched on. He wants to hit the keys and click the mouse and does so with great gusto. At times this causes friction between the two boys whose needs are very different. But this fighting over who uses the computer is no different from who uses the video and I am sure is commonplace in many households. Does anyone have an answer? Is this because I have boys and not girls?

However there are times when Paul will just add up the sums in *Maths Workshop* so that Mark can see Gus the Gorilla knock the skittles down. Paul will move the cars in *Carnival Countdown*, so that Mark can see them move and hear their sounds. Ah – peace and harmony.

I recently looked at *Silly Noisy House* with Mark for 20 minutes. Although I operated the mouse, it was wonderful to watch him totally relate to the teddies in the bath and eating the cookies in the kitchen. He could still remember that a teddy was at the bottom of the cookie jar when asked the next day. But what he loved the best was the birthday cake in the cooker. When the candles were lit, he blew them out!

But I wouldn't want you to think that the computer is on all the time. Days go by when we don't use it at all and then something sparks us off again and on it goes. We are in the Information Age where computer literacy is going to be as important as the three Rs are at present. As parents we feel we are giving our children an excellent start to a lifetime of learning.

Going on-line

Chris Flanagan
Headteacher, Sutton-on-Sea CP School, Lincolnshire

Remember that long hot summer back in 1995? My staff probably thought it was the heat that had affected me when we returned to school in the September and I told them that the school would shortly be able to access the Internet!

Whilst on holiday in Devon I had decided to spend a day at Honiton Agricultural Show. The temperature was in the 90s and I decided to seek the shade of one of the marquees. It was there that I received my first experience of the 'Net'. A local Service Provider had a stand demonstrating the World Wide Web. The half hour or so I spent browsing around was enough to convince me that this was something with enormous educational potential. Although evaluating the possibility of obtaining Internet access featured on our School Development Plan for the year, I hadn't envisaged it would happen in quite this way.

A month or so later an old modem, supplied by the LEA in the early days of LMS but never used, was pressed into service via a trial Compuserve account. It sufficed to demonstrate to staff, albeit painfully slowly, what had enthused me so much in Devon. By Christmas we had acquired a new high-speed modem and made acquaintance via e-mail with an elementary school in North Carolina, USA.

There was an assumption that very young children couldn't handle the Internet (after all, many teachers have professed that it is beyond them!) let alone find anything that could possibly be of value to them. Judging by the number of requests I receive in my mailbox to complete questionnaires, an undergraduate somewhere probably has the research evidence to support the theory that Internet access in UK schools is dominated by the secondary sector and where it is available in primary schools, it is most likely to be used by Y5 and Y6 children on a stand-alone machine.

This assumption was to be proved wrong during the course of the next few months. I would urge any school considering going online to look at the issues from a whole school perspective and plan accordingly. But back to that first project . . .

There was the excitement of being able to establish pen-pals with children on the other side of the globe who could receive your letters potentially within seconds of you having sent them – no hanging around for the postman! Then there was the discovery that it wasn't just text that could be sent to each other – scan the class photo taken by the School Photographer and attach it as a file to an e-mail. Suddenly those names at the bottom of each message turned into real people. It was a comfort to have found a school to work with who seemed to be at the same stage of developing the educational use of the Internet as ourselves – i.e. beginners! The learning process for both schools was very much a shared experience.

We soon realised, once the initial euphoria had subsided, that if the project was to progress, some clear objectives needed to be decided upon. It can be very easy for 'keypal' projects of this kind to stay at a superficial level, i.e. an exchange of 'chatty' letters with details of likes, dislikes, hobbies, etc. There is certainly a place for this kind of exchange; indeed it is probably essential for establishing initial relationships. To extend beyond this to provide deeper learning experiences for the children requires considerable cooperation and planning between the staff involved at each school. We

The children's portrait of the school staff designed for one of their Web pages.

decided to attempt to structure some of the personal and cultural information the children had been exchanging into a database which could be queried by children in both schools.

A fairly straightforward exercise, we thought at first, but we soon learned an important lesson – ensure that the method for exchanging data is in a format which can be translated at both ends. You can't assume that your partner school will have the same software, let alone the same hardware platform as you. This is especially true of schools abroad who are more likely to be using a Mac or PC than an Acorn or BBC.

Encouraged by our successes so far, we were attracted to one of the international projects which appear from time to time on the UK Schools mailing list. This list is an essential subscription for any teacher or school with an Internet account, but unlike others, this one is free! Any list member can post a message to the list which is then forwarded to all other members.

The project which caught our attention was a call to participate in a worldwide survey of television watching habits by school children. This was a great way of getting to find out about hundreds of other schools who were online around the world.

Information was collected in a predetermined way over a set period and each school's results mailed to the list. It does not take a great deal of imagination to appreciate that this resulted in a wealth of real data and a real audience.

By now other classes in the school were getting curious as to what all the excitement was about. 'Can we have a Keypal, please?' 'Can I send an e-mail to my uncle in Cyprus?' 'Can you find us a school in Scandinavia for when we do about the Vikings?' This was something that could not be kept the preserve of the older children and needed to be spread further throughout the school.

It was around this time that we realised that we couldn't communicate electronically with each other within the same building! Networks had previously been perceived to be something only found in corporate institutions and perhaps a few lucky secondary schools. With the assistance of our caretaker scrambling around the loft with some cable, some cheap and cheerful network cards and a good few hours of trial and error, we had a network which could share printers and other resources. Just as importantly, we could now e-mail internally, practising our skills before being let loose on the world at large and saving telephone costs by having more than one computer connected to the Internet simultaneously.

Hence 'The Head's Challenge' was born. Each day I mailed each class a clue about a historical event or figure and invited responses by e-mail. The carrot was the prize of the use of a joystick and arcade game for breaktimes until the next Challenge was won. Never has our library been in so much demand for research!

Toward the end of the Summer Term 1996, we were successful in our bid to take part in the NCET Educational Internet Service Providers Project. This was to provide us with a much larger Acorn-based network across seven of our nine classes, including KS1 classes for the first time. The installation, configuration and staff training for this was to take up most of the Autumn Term.

The Head's Challenge

Clue 1: The answer has a Chinese connection!
Clue 2: Was this person Mr Johnson's landlord?
Clue 3: Bob was the main man in Mr Johnson's little gang – and Mr J was pleased to do his bidding!
Answer: To Mr Flanagan

We Think the chinese connection is gunpowder because Mr Johnson was Guy Fawkes, Bob was Robert Catesby and they tried to use gunpowder to blow up parlement. From Peter, Chris And Scott

It was completed just in time for the children to send their traditional Christmas letters to Santa, only this time by e-mail. This just had to be our most exciting online discovery to date. Virtual Santas are plentiful on the Internet in December but the discovery of the genuine article at the site of the ABC Project (Accessing the Birmingham Community) was a revelation for children and staff alike. Personal replies to the children's questions and requests were received often within 20 minutes. Through pooling information gained from their individual questions, children were able to compile a comprehensive CV for the grand old chap. One school of thought was that, in a past life perhaps, he was a teacher . . . ?

I have deliberately concentrated on some of the ways in which e-mail has been used at our school. E-mail is possibly the easiest of the Internet services to manage. Many of the skills that children need are transferable from other areas of IT, such as word processing, and the English curriculum. The beauty is that those skills can then be used to develop projects covering many other curriculum areas. The use of the graphical side of the Internet, namely the World Wide Web, has other classroom management implications and would best be considered in an article to itself.

Currently we have Y1 and Y2 children engaged in comparing characters in reading scheme books used around the world. They describe them to each other often in great detail, give their own favourites and also looking for similarities and differerences. In the future they may extend this experience into inventing new, shared stories but it is still early days yet.

Our Y3s are exchanging data about local flora and fauna with schools in Australia, the Y4s are conducting a survey of the significance of food and religious festivals around the world, Y5s are lapping up the wealth of information available on the Web about Vikings and the Y6s are attempting to set up a Book Appraisal and Story Exchange Network. Whoever thought an untypical English summer would lead to all that?

The Birmingham Father Christmas project's e-mail address was at: father.christmas@abc-project.org.uk

Chris Flanagan can be emailed on: cjf@sutton.lincs.sch.uk. The School has its own Web site on: http://homepages.enterprise.net/seagulls

Using Pixies in the key stage 1 classroom

Alison Broad
IT Coordinator, Coppice Primary School, Hollywood, Hereford and Worcester

The background

The school bought two Pixie floor robots from Swallow Systems last year in order to fill a gap in our IT planning for the five- to eight-year-olds in Key Stage 1.

Further up the school, control technology is fairly well covered with the use of Pips and Roamers in Y3, Screen Turtle on the computer at Y4, the very popular *Crystal Rainforest* adventure program at Y5 and a Valiant control board (where the children put their programming skills to real use in designing and making computer controlled models) at Y6.

We had tried using the Pips and Roamers in KS1 and whilst the children had thoroughly enjoyed the activities, we were concerned that the Pips and Roamers had too many buttons and involved the use of numbers way beyond the comprehension of most young children. What we needed was something simpler which the children could use within the boundaries of their understanding.

Then we saw Pixies being demonstrated at Hereford and Worcester's IT Service at Finstall and thought that these could be just what we were looking for. Easy to use floor robots with just a few push buttons – even our most 'leisurely learners' should be able to cope with these! We hoped we had struck gold.

Using Pixies in our school

Pixies are fairly robust, although having said that, both of ours have had to be sent back for repair. One problem is that our KS1 classrooms are carpeted and the fluff does terrible things to Pixies' insides! We have learnt from our mistake and now either work on vinyl flooring or use tracks which we make ourselves from large sheets of paper that we actually stick on to the floor with transparent 'sticky backed plastic'. This keeps the tracks absolutely flat and ensures the Pixies work accurately. There is nothing more frustrating for children than to watch their carefully planned precision programming go askew because the Pixie couldn't negotiate the lumps and bumps of the dog-eared track.

Pixies don't take kindly to being pushed or pulled either, as this can break their wheels or damage the works inside. So it is worth spending time with the children, showing them how to use them and explaining that Pixies can't be treated like toy cars.

Last year our school ran a very successful Creative Arts week during which our Pixies were in constant use – diguised as dragons guarding castle gates, running obstacle races and knocking down skittles round complicated tracks. But towards the end of the week one of our Pixies broke an axle and had to undergo emergency surgery using superglue and rubber bands!

Fig. 1. *'It's my go, it's my go!'*

Swallow Systems were quick to repair the Pixie, but told us that they actually get very few Pixies back for repair and that we must have been using ours very harshly to inflict such damage. Oops! Perhaps we were just unlucky and to be fair, since that time, we have had no problems.

So how are we using our Pixies at the moment?

This half term the topic in our Year 1 classes is Materials. Central to the theme is the story of the Three Little Pigs. Around the room you will find Three Little Pig displays, clay pigs, felt pigs, glass pigs, even flying pigs! On the floor in the corner of the room is a track, a map, showing a road that leads to the houses of the Three Little Pigs. Along this road creeps a wolf, visiting each house in turn to devour its occupant.

The wolf is actually a Pixie in disguise and the road is a carefully planned route which will enable the children to program the wolf to successfully reach each house in turn.

Fig. 2. *'A Pixie in wolf's clothing'.*

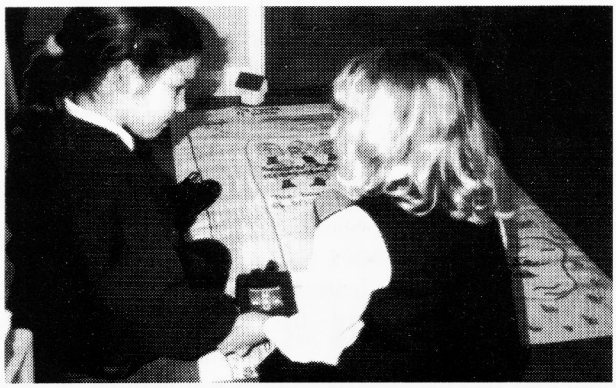


Fig. 3. *'So, how many shall we do now?'*

The children have all played with the Pixies in the Reception class, so it is no problem getting the wolf to move in simple stages along the track from house to house. Some of the children find it difficult turning the Pixie the right way. Left and right orientation can pose a real problem to begin with. But the Pixies do move in 90° turns which is much simpler than Pips that move in single degrees. The children also sometimes forget to clear the memory (CM) and can't work out why the robot is not doing what they asked it. It actually remembers everything that they previously programmed it to do, until they 'clear memory'.

We tend to have both our Pixies available, because sometimes something gets a bit stuck or the battery runs down, so there is always one as a back-up. In this way the children can quickly swap over and carry on with their investigations without any sense of frustration or loss of impetus.

During this half-term, the children have been working in pairs in fairly short bursts of 15–20 minutes once a week or more. They are given plenty of opportunity to explore and learn for themselves how you get the Pixie to do what you want it to do. Some do try to send it dancing round and round or across the tiled area and back, but they keep returning to the challenge of the map.

It is interesting to watch as the children develop from giving simple instructions to building up ever longer and more complex chains of commands.The brighter children very quickly cotton on to the fact that you can program the Pixie to negotiate the complete track in one go. Then it becomes a challenge to see who can be the first to achieve this.

In Summary

Pixies are seen as a fun activity to young children. They love to play with them and explore how they can move. Pixies offer a very useful way of introducing simple programming and control skills to the young child and incidentally help to develop many other skills besides. Just think of all that measuring and estimating that is involved in getting the Pixie to move from one side of the classroom to the other in just one go.

We are very satisfied with our investment and in our experience: 'every school should have one.' Just remember to treat them gently!

Picture Builder with a Reception class

Betty Lumley
St Helen's College, Hillingdon

My reception class is very crowded with 24 children in a small room. We don't have a lot of space to move around and as a result the work is of a more formal nature. I like the children to experiment and learn through first-hand experience, and one of the few places they can do this is when using the computer.

I had experimented with *Shape Builder* with Y3 children and could see the mathematical advantages of using it with older children as a problem-solving activity. My class saw me fiddling with it one morning before school and were keen to do the same. I thought they would find it difficult to operate and would need constant help so I taught two children how to work the options and hoped the 'grapevine' would do the rest.

Soon the children were teaching one another with phrases like:

'Press escape and choose print – you know the word beginning with "p".'

or

'Choose different colours otherwise the shapes won't show.'

To the question:

'Why didn't I get my name printed?'

the answer would be,

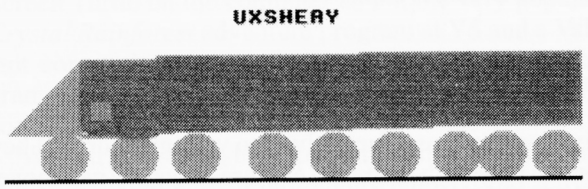
'Because you didn't press Return. How did the computer know your name?'

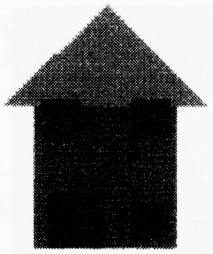
Their explanations were clear and to the point and were always heeded.

In a few days time the children were clamouring to use the program – so much so that they now had a queuing system (names on the blackboard). An Open Day was at hand and I could see an impressive display developing but unfortunately all the children went through a similar learning process. At first they chose a shape, printed it anywhere, often completely obscuring the previous shape, and they weren't bothered about the overall appearance. Nobody worried that the colourful screens were translated into shades of grey when printed; all were delighted with the hard copy and would explain

the shapes that lurked underneath the visible printout. They talked about the shapes and for the first time appreciated that a square turned through 45° is a 'diamond'. I thought this might be the limit of their progress

The display was reasonable but, after Open Day, in the last two weeks of term, their learning curve took a steep incline. Children now went to the computer with a definite idea of what they wanted to produce: the shapes were stretched, rotated, enlarged, and diminished, accurately and with ease. They produced spaceships, boats, witches, decorated Easter eggs and the inevitable houses. This was very pleasing, but had the disadvantage of being time consuming as each child strived for their exact picture, so much so that after everyone had a satisfactory design I moved on to other





things. It seems their learning experiences were akin to young children painting – they often obliterate a good picture with a black wash – for them the doing is all. Until they feel the need to produce a structured picture all encouragement to do so is in vain.

I felt my class had learnt a lot about shapes and their movement and a great deal of new mathematical vocabulary was assimilated effortlessly. The teaching was incidental and I am sure they thought they had discovered it all for themselves.

There was great delight when I was asked to do this article and they could once again have access to *Picture Builder* to produce these illustrations.

Resources

Due to limitations of space, here are brief details of the CD-Roms and some of the software mentioned in the articles. Please note that prices can vary enormously so ring around several software suppliers before buying. It is also is worth contacting your local education authority IT team for advice, availability and support.

New computers often come with pre-installed software, which can be very attractive but again worth checking to see if it is what you want. Public libraries are increasingly loaning out software, including CD-Roms, and sometimes hardware, so check to see if your local libary offers this service. Some bookshops and computer hardware shops also have multimedia departments where you can look at CD-Roms and software before you buy. NCET publish reviews of CD-Roms which are available on their website (http://www.ncet.org.uk or ring 01203 416 994 for further details).

You can also keep your eyes open for reviews in various magazines and publications such as *MICRO-SCOPE*, or contact me, via *MICRO-SCOPE*, or Yvonne Peers, MAPE, Technology Centre, Newman College, Genners Lane, Bartley Green, Birmingham B32 3NT; Tel 1021 476 1181, ext. 271, for any further information.

CD-Roms

Title	Computer	Price	Supplier	Tel
Arthur's Teacher Trouble	PC, Apple	£34.00	Broderbund	01429 250520
Darby the Dragon	PC, Apple	£19.99	Broderbund	01429 855000
Grandma and Me	PC, Apple	£32.25	Broderbund	01429 250520
Kidpix studio	PC, Apple	£34.99	Broderbund	01429 855000
Maths Workshop	PC, Apple	£34.99	Broderbund	01429 855000
Mighty Maths: Carnival Countdown withTeaching pack	PC, Apple	£40.00	Xemplar	01223 724200
Mighty Maths: Carnival Countdown	Apple, PC	£25.49	REM	01458 253636
Millie's Maths House	PC, Apple	£19.95	TAG Developments	01474 357350
My First Incredible Amazing Dictionary	PC, Apple, Acorn	£30.00	Dorling Kindersley	0645 636465
PB Bear's Birthday Party	PC, Apple, Acorn	£30.00	Dorling Kindersley	0645 636465
Silly Noisy House	Apple, PC	£29.99	Multimax	01652 651651
Storybook Weaver deluxe	PC, Apple	£19.95	Potential Software	01734 225570
Tortoise and the hare	PC, Apple	£34.00	Broderbund	01429 250520
Where in the World is Carmen Sandiago? jnr edition	PC, Apple	£34.99	Broderbund	01429 855000

Other software

Picture Builder Acorn, RM186, £15 (Newman Software)
Sorting Game Acorn, PC, £15 (Newman Software).
WHOW RM186, £10 (Newman Software).
Winlogo PC, Archimedes £12 (to MAPE members).
Paintbrush comes with MicroSoft Windows.
PagePlus is available from Serif (Europe) Ltd, P.O. Box 15, Nottingham, NG7 2DA. Tel: 0800 924925.
Compose World is available from ESP, 21 Beech Lane, West Hallam, Derbyshire, DE7 6GP. Tel:0115 944 4140.

Books

Sherry Turkle, *Life on the Screen – Identity in the Age of the Internet*, Weidenfeld and Nicolson, London 1996.
SCAA, *Desirable Outcomes for children's learning*, 1996.
M. Clay, *What Did I Write?* Heinemann, 1975.

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