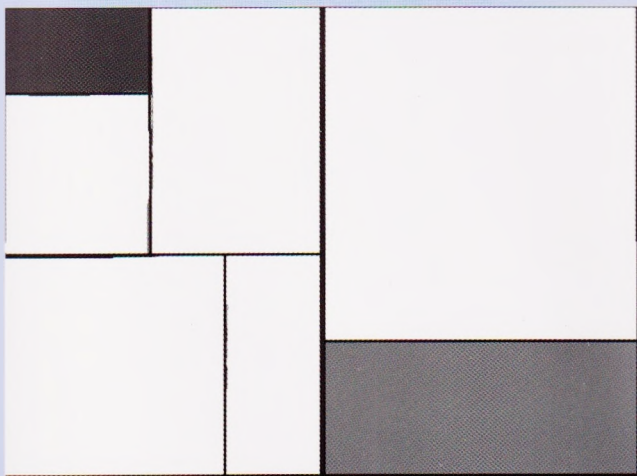
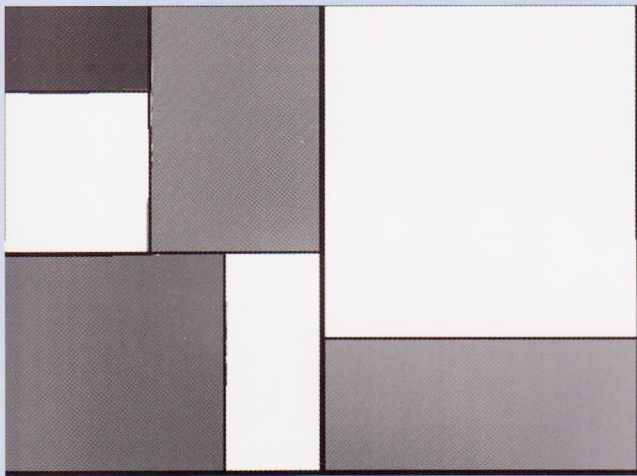


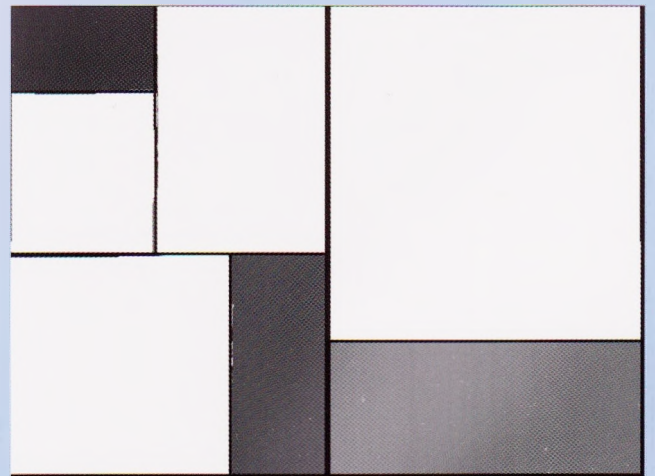
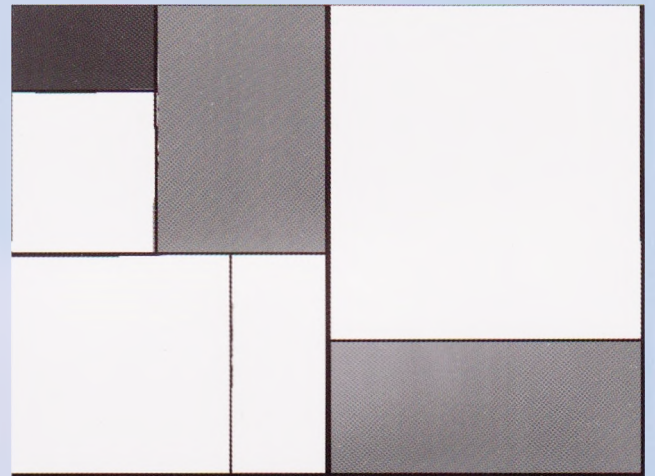
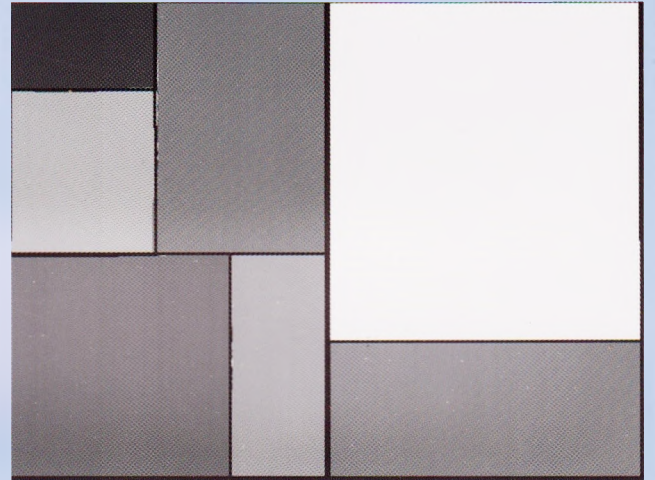
MAPE



▶ Issue No. 6



▶ Summer 2003



NEWMAN COLLEGE with MAPE

Contents

Notice of an Extraordinary General Meeting of MAPE	1
Reflections <i>Mike Doyle</i>	3
Widening access for children with special learning needs <i>Geraint Roberts</i>	5
Vintage 'cars' at half price! <i>Brian Richardson</i>	11
Working towards e-quality <i>Veronica Carter</i>	13
<i>ClozePro</i> and <i>TextThing</i> <i>Bob Fox</i>	15
Using LEGO <i>Robolab</i> in a primary school <i>Rob Humphries</i>	17
Sort It Out: an integrated approach to data handling <i>Geoff Davies</i>	20
Wireless networking <i>Nick Tumber</i>	25
Crossing continents – using e-mail in the primary school classroom <i>Roy Topping and Lorellyn Tomlinson</i>	26
Crossing continents – themed ideas <i>Leon Cych</i>	28
Year 1 reports on <i>Lost Owls</i> <i>Harriet Martin</i>	30
A weather station in your pocket! (well, almost) <i>Alan Rodgers</i>	31

Cover illustrations by Reg Eyre from his article 'Thoughts about Art (and the use of ICT)', which can be found in full on the MAPE website at www.mape.org.uk

Articles which appear in MAPE publications, excluding those which have originally appeared in other publications, may be freely copied for educational purposes within the purchasing establishment as long as the source is acknowledged.

Editor: Rhona Dick

© Newman College/MAPE 2003
ISSN 0264-3847

Correspondence to the Editor: MAPE Publications, 121 Fitz Roy Avenue, Harborne, Birmingham B17 8RG.

MAPE (Micros And Primary Education) is open to individuals and institutions. The current subscription of £20.00 p.a. UK, £12.00 p.a. students, £20.00 p.a. overseas, includes direct mailing of publications.

Application forms from: Val Siviter, Cilgeraint Farm, St. Anns, Nr. Bethesda, Gwynedd LL57 4AX

Published by Castlefield (Publishers) Ltd.

MAPE reference for Income and Corporation Tax relief on membership fee: T1644/23/1968/MT
Charity Commission reference: OSP-292898-R Reg No 292898

VAT Number: 544 8661 18

Produced by The Castlefield Press, Northamptonshire

MAPE

Magazine Issue 6

Notice of an Extraordinary General Meeting of MAPE to be held on Saturday 8th November at Newman College, Birmingham

Background

It has become clear that for various reasons MAPE will be unable to continue in its present form for much more than a couple of years.

For the past 3 years, expenditure has exceeded income quite considerably. This has meant that we have been rapidly eating into reserves (at a rate of about £20K per year). An economic membership fee for MAPE would be around £40 – a rise of 100% from the present £20 fee.

Almost all of the work of MAPE is carried out by volunteers from the working groups and council. These people write and produce all publications and products, recruit sponsors, organise and run training events and conferences, and develop resources for the website. The majority of the current activists are approaching (or past!) retirement age. Many have worked for MAPE for 10–20 years. Although we have made strenuous efforts to recruit new people to the working groups and to the committee these have not borne much fruit.

The MAPE Council has been seeking a strategy to help MAPE to survive and continue to serve the needs of its members. At the same time, other organisations concerned with the effective use of ICT in education have also been considering their future development. The council feels that the best way of ensuring that MAPE members continue to receive at least the current level of service is to join with one or more other organisations which share our aims.

To this end MAPE has engaged in discussions with other ICT professional associations about the

future roles. The discussions have taken place under the aegis of the ICT Network, the umbrella organisation to which all the associations belong and which provides a forum for collaboration and exchange of information.

A 24-hour meeting to explore the territory and to share aspirations took place in December 2002. The full membership of the ICT Network participated and included ACITT, BCS, CEG, ITTE, MAPE, NAACE, SNUG and NASEN (see notes below). Representatives from Becta attended as observers since they are represented on the ICT Network. At this meeting it became clear that NASEN and SNUG are constituted in such a way as to make it inappropriate for them to amalgamate or federate with other ICT associations.

At a second meeting, in March 2003, where ACITT, BCS, CEG, ITTE, MAPE, NAACE and Becta were represented, each association shared with the group how it saw its future. There were further discussions about the principle of there being a single professional association for ICT in education, and about possible amalgamation or federation of some or all of the existing organisations. It was recognised that no decisions about possible future arrangements could be made at this meeting since each association would need to consult not only with its full committee and/or board, but also with its membership. Further, some associations would have to take legal advice, and possibly amend their constitutions, if they were to engage in any kind of formal relationship with another organisation.

By the end of the meeting it was clear that there was merit in NAACE discussing the possibility of

developing into a more broadly based organisation incorporating both MAPE and CEG. As a consequence, these three associations have met to explore this possibility.

ACITT and ITTE are discussing a possible federation of their two organisations. As the BCS Schools Expert Panel on ICT in Education is part of a larger organisation it is not able to amalgamate or federate with other associations. However, it has indicated that it will continue to support any new groupings that may emerge. Becta has given a commitment to continue to support and facilitate any new structures that may emerge.

Proposal for a merger between MAPE, NAACE and CEG

The unanimous view of the MAPE Council is that the best way forward for MAPE will be for our organisation to merge with NAACE. CEG takes the same view. Discussions have shown NAACE to be constituted on a far more professional basis than we are with considerable strengths in the form of sponsorship, full-time professional staff, a robust and growing membership and considerable financial security. NAACE is eager to expand its own remit and very willing to respond to the needs of MAPE members by ensuring that any new organisation continues to offer its members:

- our excellent primary website
- a termly publication aimed at primary practitioners
- access to a conference and other training events at an appropriate time and cost
- a voice in decision making
- a voice in communication with the 'powers that be'
- a continued presence at BETT
- a realistic subscription fee.

All existing MAPE members will continue to receive the usual MAPE benefits for the remainder of their annual membership period and will then be invited to join the new organisation.

The MAPE constitution requires us to seek the agreement of MAPE members at a General Meeting before any such merger could take place. The next BGM is not due until Easter 2004. All

three organisations would like to see a merger take place in time for a launch at BETT 2004, which means a MAPE General Meeting before the next BGM.

We are thus calling an Extraordinary General Meeting to be held on Saturday 8th November at Newman College, Birmingham. All MAPE members are invited to attend. The EGM will be held in the course of a one-day MAPE/Becta Primary Conference, details of which will be announced at a later date.

The meeting will discuss the following single proposal, which the MAPE Council commends to members:

It is proposed that MAPE be dissolved by 1st January 2004 and all remaining assets (after satisfying any outstanding debts and liabilities) transferred to a new organisation to be formed by a merger between MAPE and NAACE (and possibly other additional organisations).

Notes

ACITT is an association focusing mainly on those who are responsible for teaching and co-ordinating ICT in schools.

BCS Schools Expert Panel provides the British Computer Society with advice on education matters and liaises with other organisations

CEG is the oldest ICT association. Its members are those with a particular interest in the educational use of ICT in schools and most of its members are secondary school practitioners.

ITTE members are those in higher education who have a role within initial teacher education and a particular interest in ICT.

MAPE is an association for primary school teachers with an interest in using ICT for teaching and learning.

NAACE is the professional association for advisers and consultants for ICT in education.

NASEN and **SNUG** are both organisations with a focus on special educational needs and an interest in the use of ICT to support learning.

Becta is the Government's lead agency for ICT in education.

Reflections

Mike Doyle

Spring's MAPE Conference had an Autumnal feel to it, a reflection, perhaps, of the career stage of the movers and shakers, and the expression of concerns that the next phase might be a wet winter with NAACE. But the stasis of winter implies rebirth. It is timely to ask what the next phase of ICT in primary education might be like.

My starting point is Roger Keeling's presentation on Geometer's *Sketchpad*. This is one of a number of applications that allows you to manipulate shapes on the screen and, for example, see how the value, and sum, of angles in a triangle change as you move the vertex around relative to the base. Might, or might not, asked Roger, this be useful in the primary classroom? I recognise this question. It is as old as the 1980 computers in primary schools project and fundamental to MAPE's aim of helping teachers use ICT effectively. But, as with the introduction of Logo two decades ago, it begs the question of the relationship of ICT to both curriculum and teaching method. To even begin to answer this prior question is fraught with difficulties, but I will try.

May I start with education itself? Although we can trace formal education in literacy and numeracy back to Sumeria some 6000 years ago¹, education as we know it is very recent: It originates with the Lancastrian schools of 1800². Around 1800 a lot of interesting things happened³. For instance: Richard Trevithick made the first successful high-pressure steam engine; a fortnight after Volta developed his electric battery, it was used to dissociate water into oxygen and hydrogen; and Jacquard perfected a digital method for weaving patterned cloth. The phase-transition from craft to industrial production was under way and whilst the likes of the Stephensons⁴ provided the engineering backbone, the successors of Lancaster complemented it with an elementary education that, by 1870, had become compulsory. Issues identified by Rooper⁵ in the 1890s show continuity with today's curriculum and method, and concerns, and with that of Ur 4000 BC; changes in technology notwithstanding.

If I wish to break the continuity, I find that I have to go back in evolutionary time to the days of the Neanderthals and other archaic *Homo sapiens* species who, whilst possessing brains as big, if not bigger than, ours, had cultures that remained static for half a million years and more⁶. It is only in the last quarter of a million years that there is any sign at all of culture, as we know it,

including 'symbolic' behaviour. The earliest safe date is around 100 Ka ago, with unequivocal evidence as recent as 40 Ka ago. But the problem with notions like 'culture' and 'symbol' is that they have no explanatory power: a bit like the doctor taking your temperature in order to tell you what you already know. From a purely functional perspective, the difference between our ancestor species and us is that we, somehow, have developed an external memory system (EMS). By 'external memory system' I don't mean language. Speech evolved, like sight, in stages alongside the stone tools that mark our genesis. What no species other than ours appears to have capable of is drawing, which brings us back to school.

Before I move into the classroom, perhaps I should be a little more explicit about the evolutionary role of language, or rather languages; not dismiss speech in a sentence. The really interesting thing about languages is their number; not just diversity but regional and inter-generational dialect shifts. Evolutionary psychology⁷ offers us an answer here. Pinker^{8,9} is adamant that speech is a biological adaptation. Dunbar¹⁰ has suggested that the primary role of speech is social cohesion – gossip – which he believes has developed as a sort of long-distance grooming in large groups. One social skill required in any cooperative society, which we are, is what is known as 'freerider' detection: detecting those who do not reciprocate. In small groups, you know who has a padlocked purse, but how do you know whether someone you don't know is reliable? The answer is 'accent' and dialect¹¹. The 'Queen's English' conveys information about the status of the speaker; the street gang has its identifying mode of speech. Check your own conversation, listen to soaps, read popular fiction: this is the 'language' that children come school with. We bend it to other purposes.

Our 'external memory system' is not speech. Nor is it technology, in the stone-tool sense. It is drawing, and most of school is about its effective deployment. Drawing develops after speech. Whilst speech development is complete by the age of four, the developmental phase of drawing continues to seven or later. Our classroom walls reflect its primacy. We have a battery of craft skills that we deploy to teach children to link speech with those graphics that education values. Whilst we value literacy and numeracy in particular, it is fascinating that others, including Cox¹² and

Gregory¹³ focus on representative art – children’s drawings – rather than the use of drawing by our species. It is arguable that children’s first pictures have more in common with an engineering drawing than a photograph, and that the route we provide through shapes and geometry leads more naturally to construction than representation. I find it fascinating that Richard Trevithick¹⁴ provided his son with an example of a good engineering drawing, and that I, today, could use it to construct a replica of Bull’s engine. Similarly, I recognise the animals painted on cave walls some 30–10 Ka¹⁵ ago, yet I am unable to pronounce Urdu inscriptions outside schools in Bradford.

Education, then, is concerned with teaching children to access our external memory system and this system has, historically, consisted of static drawings: letters, shapes, numbers, signs and symbols; but our EMS has moved on. We teach children to look at static information and animate it in their heads. (Of course we start off ‘in-the-head’ using language alone, bending gossipy speech to the precision of oral arithmetic, as a precursor to external representation; through rhymes and phonic games we teach children to segment the language stream ready to associate sound with letter.) Thus, when $2 + 2$ is inscribed on a child’s slate, s/he will mentally evaluate this as 4. We have been carrying on our trade this way for over 6000 years. Now, horror of horrors, drawing has risen up and bitten the hand that feeds it! ICT, a development founded in our graphic capability, has ‘mechanised’ much that was once proudly mental. A large plastic ‘Smartie’ sits on my desk, ready to do the sums that I used to get wrong. My PC quickly converts my personal spelling system into that enshrined in the OED^{16,17}. Were I to wish it, I needn’t read and write at all: just muse out loud and the PC will write it down and read it back to me. And when faced with a text in some other tribe’s private language; I can slap it through *BabelFish* on the Net to get the gist of what they were keeping secret from me. Skills that were once essential are now optional.

To date our approach to ICT has been to put to one side the contradiction between the capabilities of the medium and our traditional method. We use ICT to support our method; a nice example is MAPE’s *Big Book* software. This is entirely appropriate. The challenge ICT poses is such that the resources needed for change must securely be in place before method and curriculum undergo their necessary phase transition. At present we still have a very underdeveloped ICT infrastructure, not only in terms of equipment, a problem soluble by throwing money at it, but, critically, professionally. We have our subject and phase expertise and, with some effort, we can find ways of making ICT help us that will encourage us to develop some degree

of facility in handling the hardware. But few of us are comfortable with ICT in the way we are with books. Perhaps this is why the MAPE *Big Books* don’t speak. If I might draw a parallel with transport, it took 200 years from Trevithick’s first high-pressure steam engine to grid-lock on the M6. The microprocessor that powers the PC is only 30 years old. We have plenty of time before we need really worry about ICT and I get my bus pass next year. Nonetheless, although I will probably not be around when ICT replaces paper and children have to learn to manage a medium that can, put formally, execute algorithms and evaluate expressions, I would like to speculate on some potential advantages.

The problem with ‘doing things in your head’ is that the answer can come out wrong. Many generations of children have been put off mathematics simply because they got too many sums wrong. I have taught children who could not reliably count counters, and who confused 2, 5, 3 and 8 (not to mention b, d, p). Yet, as Alan Turing said, numbers are reliable, trustworthy, and should be our friends. Is it really such a sin to teach this to children using a calculator? Similarly with reading: why not deploy the fruits of linguistic science embodied in text-to-speech synthesis instead of our rough and ready phonics? And what about speech recognition? Might learning to speak in a way that the computer can cope with be a useful step in developing a spoken foundation for literacy? And what about a modern foreign language: babelfish?

That is quite sufficient speculation. You can already see the problem: These things cannot be done within the framework of current teaching method. They threaten the curriculum. Worse still, they are incompatible with SATs. Take teaching number with a calculator: the technology is as cheap as conventional print and structural material, if not cheaper. The problem is that identified by Roger over Geometer’s *Sketchpad*: our curriculum and method cannot contain a medium that of itself can carry out the mental activity that is being taught. The ban on calculators in the National Numeracy Strategy makes this very clear. The thinking is analogous to that behind the Red Flag Act of the late 1860s: the road infrastructure for the new technology had not been developed and steam vehicles frightened the horses, unfettered steam power was let loose only in the secure environment of the railway. Our ‘red flag’ is the National Curriculum, which constrains the computer’s power much as the man with the flag kept steam vehicles down to walking pace. (Note the timing of the NC and the view taken of computers and compare with the MEP* of an earlier govern-

*MEP is the ‘Microelectronics in Education Program’ of the early 1980s

ment.) However, as with personal transport, there will come a time when the constraint must be lifted. How might we prepare?

The first step is to survey the way forward. We do have a bit of a starting point: certain 'special needs' are products of the system, virtually industrial injuries, and such children are beginning to access suggestive technologies and techniques. (I do not include ILS, which seeks to emulate conventional teaching methods electronically.) MAPE has considerable expertise in both ICT and primary teaching. Were the group to be willing to think out of the box, I believe that MAPE could do this survey work and map out the next phase in helping teachers with ICT. If nothing else, the debate would be stimulating and might provide a focus for a new generation of enthusiasts to take up the baton from the MEP originals. But this work cannot be carried on in isolation. MAPE needs to come together with the wider ICT-in-education family.

Bibliography

1. Kramer, S.N. (1981) *History Begins at Sumer*, 3rd edition. Philadelphia: University of Philadelphia Press.
2. Gordon, P. and Lawton, D. (1978) *Curriculum Change in the Nineteenth and Twentieth Centuries*. London: Hodder & Stoughton.
3. Asimov, I. (1990) *Asimov's Chronology of Science and Discovery*. London: Grafton Books.
4. Smiles, S. (1857) *The Life of George Stephenson, Railway Engineer*. London: John Murray.
5. Rooper, T.G. (1896) *School and Home Life*. London: A Brown & Sons Limited.
6. Stringer, C. and Gamble, C. (1993) *In Search of the Neanderthals*. New York: Thames & Hudson.
7. Evans, D. and Zarate, O. (1999) *Evolutionary Psychology*. Cambridge: Icon Books.
8. Pinker, S. (1994) *The Language Instinct*. London: Allen Lane, The Penguin Press.
9. Pinker, S. (2000) *Words and Rules*. London: Phoenix.
10. Dunbar, R. (1996) *Grooming, Gossip and the Evolution of Language*. London: Faber & Faber Ltd.
11. Nettle, D. (1999) *Linguistic Diversity*. New York: Oxford University Press.
12. Cox, M. (1992) *Children's Drawings*. London: Penguin Books.
13. Gregory, R.L. (1998) *Eye and Brain*, 5th edition. Oxford: Oxford University Press.
14. Trevithick, F. (1872) *Life of Richard Trevithick*. London: Spon.
15. Delluc, B. and Delluc, G. (1990) *Discovering Lascaux*. Bordeaux: Sud Ouest.
16. OED (1999) [CD ROM] *Oxford English Dictionary*, 2nd edition. Oxford: Oxford Electronic Publishing.
17. Encyclopaedia Britannica (2000) [DVD] (sl): Britannica.co.uk

Widening access for children with special learning needs

Geraint Roberts

Information and Communication Technology (ICT) can aid significantly the access some children have to learning. Inclusion into the state education system and the provision it makes is very important for children across the range of learning needs. At the introduction of the National Curriculum in 1989 the Department of Education and Science (DES) for England and Wales stated that:

All pupils share the same statutory right to a broad and balanced curriculum, including access to the National Curriculum.

Principles in relation to the use of Information and Communication Technology by SEN pupils were outlined in a review of the National Curriculum carried out by the Qualification and Curriculum Authority (QCA 1999:3):

- *The National Curriculum establishes the entitlement of all pupils to the areas of learning outlined, one of which is ICT. Any uses for 'access' that we may define for ICT in relation to pupils with special educational needs must be seen as additional to, rather than instead of, that pupil's right to the National Curriculum programmes of study for ICT.*
- *It establishes a special role for ICT in providing for pupils with special educational needs, firstly in assisting with the language and literacy demands of the curriculum. . . . Secondly, ICT is to be used to develop pupils' understanding and knowledge of the 'wider world' . . . (QCA 1999:7)*

(QCA 1999:184)

However access to ICT for the pupils with whom I work is not always straight forward. As they are unable to gain access through conventional means of keyboard and mouse some form of 'Assistive Technology' is required.

An Assistive Technology device is: an item, piece of equipment or product system whether acquired commercially off the shelf, modified or customized that is used to increase, maintain or improve functional capabilities of individuals with disabilities. (USA Public Law 1998)

The use of Assistive Technology enables pupils to communicate, interact with and control aspects of their environment, in many cases for the first time.

In such a learning situation the theory concerning 'mismatch', a relatively recent explanation of special needs, is appropriate:

any investigation of an individual pupil's difficulties needs to consider the circumstances around the pupil as well as within the pupil. (Hardy 2000)

A document published by London Borough of Newham (1988) stated that:

Although traditional views of special educational needs have focused on pupils, recent research... suggests that a mismatch between the pupils' needs and the curriculum on offer can exacerbate or even create special educational needs.

The move away from putting focus on the individual has been accompanied by a willingness not only to explore strengths and weaknesses within the pupil but also within the community in which the pupil learns. It is important therefore to ensure that the ICT context is an appropriate one for each pupil.

The use of ICT within the special school environment is a powerful means of access to a broader and more balanced curriculum. Appropriate ICT resources within school give pupils the opportunity to work co-operatively and collaboratively, as well as individually. Also, when used appropriately ICT can have the effect of heightening self-esteem and self confidence.

The school

Our school is a special needs school for children aged 3–19 years. The school is situated within a large council housing estate, and often suffers problems of vandalism. At present there are 74 pupils but more children are waiting to be enrolled. The pupils have a wide range of special needs, ranging from band 1 to band 4 in accordance with their learning difficulties. The school is bilingual in

nature (English and Welsh) with many pupils both primary and secondary being integrated into mainstream education.

This account concentrates on one specific class of eight pupils varying in age from 3 to 9 and all with severe or profound learning difficulties (SLD). It is staffed by one teacher and three full-time assistants, with a school nurse at hand and with regular visits by physiotherapists. Four children are confined to wheelchairs, one suffers from Down's Syndrome and three have autism.

Pupils' needs

After consultation with the class teacher and speech therapist, we agreed that the best method for these children to gain access to the benefits of ICT was through the use of switches. We then considered the children's needs.

Child A suffers from Cerebral Palsy and has no speech, most of her time is spent in a wheelchair. She reacts and grasps at shiny objects, her grasping movements being erratic and not very precise. She reacts to colourful movements and enjoys music. Child A suffers from fits and these tend to affect her concentration.

To help Child A develop her skills of reaching and grasping for a purpose, and to eventually develop a concept of choice the teacher wished Child A to use a 'Battery Switch Adaptor'.

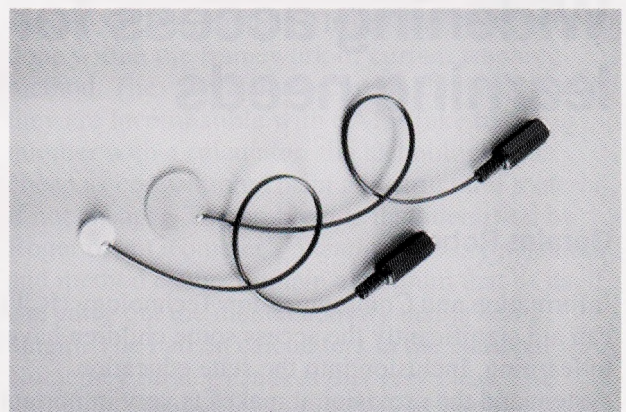


Fig. 1. Switch adaptor.

This can be connected to most battery operated toys e.g. a barking, jumping dog. By connecting the adaptor to a large pressure switch, 'The Big Switch', we hoped Child A could learn to activate various toys for herself and eventually choose between two toys. A 'SwITCh Board' was also needed to enable 'The Big Switch' to be connected to the Windows PC. This could then be used to interact with software which would provide Child A with some form of visual stimulus of cause and effect.

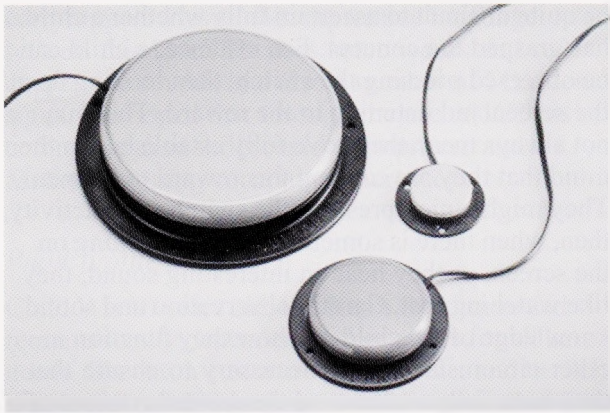


Fig. 2. *Big switches.*

Child B suffers from West Syndrome and is confined to a wheelchair. His head movement is unpredictable and is continuously rolling from side to side. He suffers from fits and is on medication. He is registered blind, but can see light. He reacts and likes being led by the hand to touch things, especially toys that make a noise; he also enjoys listening to music especially 'Ladysmith Black Mombaze' and also his sister's, mum's and dad's voices. The teacher wished to concentrate on Child B's head movements as a means of activating a switch or two switches. 'The Big Switch' could be mounted onto the wheelchair by a 'Gooseneck Switch Mounting', one either side of Child B's head.

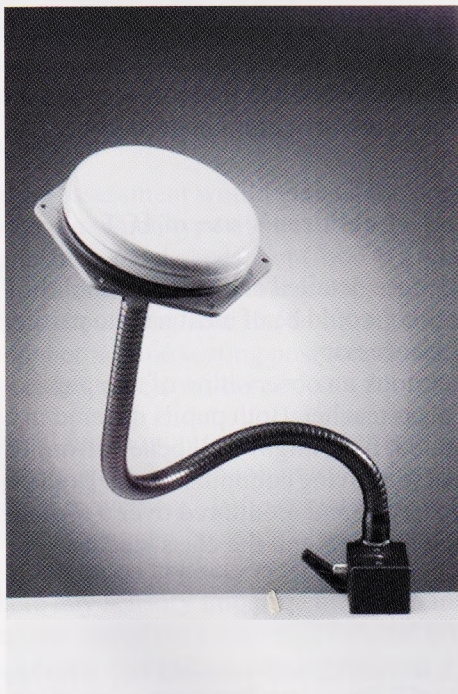


Fig. 3. *Gooseneck switch mounting.*

As Child B's head moves, a switch is pressed activating a voice or sound reward. To help Child B begin to control his own environment and learn the

concept of cause and effect, an infra red 'AirLink Remote Switch' could be used in conjunction with the 'PowerLink 2'. These resources would enable Child B to learn how to turn on or off any electrical piece of equipment such as a CD player or optic fibre lamp (from up to 6 metres away).



Fig. 4. *Powerlink.*

Child C suffers from profound multiple learning difficulties and is confined to a wheelchair. He has movement in his hands and arms. The teacher wished to develop muscle control, gross motor skills and also an awareness of environment. This could be achieved through the use of a large pressure switch (The Big Switch), and a 'Gooseneck' mounting for the wheelchair. The switch could be connected to various toys by the 'Battery Switch Adaptor' or via the PC by the 'SWITCh Board' to interact with cause and effect software.

Child D is confined to a wheelchair, her understanding is limited. She has no movement in her left arm and cannot speak but can use a yes/no board and show what she wants by eye pointing.



Fig. 5. *Pal Pad switches.*

She likes bright colourful objects, listening to pop music and using simple switches provided by the speech therapist to operate apparatus. To establish a good grounding for cause and effect, the teacher would like Child D to have access to large pressure switches or 'Pal Pad Switches', which need very little pressure to activate.

The switches could be connected via a 'Battery Switch Adaptor' to a selection of toys. Child D could also make use of the 'SWITCh Board', along with suitable cause and effect software. Because of Child D's love of music, we thought a 'MIDI creator+' might provide stimulus not only for her, but also for other children in the class.

The 'MIDI creator+' lets children participate in music making, by connecting switches and sensors into the unit, so that gestures and movement can be translated into music. To work with the 'MIDI creator+' a couple of 'MIDI sensors' which are designed to detect the slightest movement would be needed.



Fig. 6. *MIDI creator+*.

Three of the remaining children in class 1 are autistic. The class teacher is presently in the process of teaching these children how to point as a means of communication. An ideal resource to help with this teaching would be a 'Touch Monitor'. Along with the relevant software the touch monitor could also be used as a means of improving hand-eye coordination.

Concept of cause and effect

Children with severe physical disabilities or profound and multiple learning difficulties find it very difficult to control their environment. They are denied many of the early learning and interactive experiences other children have. Through the use of switches, these children start to make associations to do with cause and effect. However, it can

be quite difficult to ascertain fully whether a child has grasped the concept. For instance, a child can be observed pressing the switch, then looking up at the screen and listening to the reward. This may not always mean they have fully established in their mind that they are causing this reward to happen. They might enjoy pressing the switch as an activity, then, when there is something nice happening on the screen, or they hear an interesting sound, they like watching that. Careful observation and sound knowledge of the child and how they function in other circumstances are necessary to ensure that they have fully understood the desired concept of cause and effect.

Switch accessible software

Choosing the correct software is an important factor in ensuring that the most is achieved from any access devices purchased. Some software may be used to develop the concept of cause and effect, often seen as the first level of switch operation.

Some software may be used to teach 'Switch Timing,' or pressing the switch at the right time. This is a big step in switch operation. It requires the motor and cognitive skills to operate the switch and an understanding of the task (more suitable for the autistic and Down's Syndrome children in class 1).

The next stage of switch control involves choice making, allowing the selection of desired items. This involves a scanning process controlled by one or two switches. Development of this skill provides opportunities for switch users to access a much wider range of curriculum material.

Analysis of children's use of ICT

Often a more detailed analysis of which ICT applications would be of most help to particular pupils is necessary.

I undertook an observation of two pupils, chosen by the class teacher. Both pupils differed in abilities and age, but both might well benefit from ICT as a means of improving communication. Both pupils were observed and monitored over a 6-month period, by myself and the class teacher.

Pupil profile – Child X

Child X is a sociable 5-year-old boy who has Down's Syndrome. He experiences a significant developmental delay. He has asthma, needs an inhaler and has fluctuating hearing loss. Child X should wear glasses at all times. He has a restrictive diet and is not yet toilet trained. His understanding of the spoken word is at single information

carrying word level. His expressive language reflects this level. He uses some words and expressive sounds and also a number of Makaton signs. We hoped that through the use of ICT his communication skills could be improved and his Makaton signing vocabulary increased.

Pupil profile – Child Y

Child Y is 10 years old, has Rett's Syndrome and remains totally dependent on her carers for all her needs. She has a curvature of the spine, and her left hip has a fixed dislocation. Child Y wears ankle/foot splints and a spinal jacket, uses a special seating system in her wheelchair and needs careful positioning throughout the day to maintain hips, pelvis and spine in the optimum position. Child Y often has fits and sometimes needs oxygen and the assistance of a nurse. The oxygen tank travels with her at all times.

Child Y communicates at a basic level using eye movements, head turning, vocalisations and facial expression. She has developed discrete and individual non-verbal communication skills. Child Y can respond yes and no using eye and head movements, e.g. she uses her eyes to point to a yes/no board; closing her eyes tight indicates a definite no. We hoped Child Y's communication skills could be further developed through the use of switches.

When Child Y is happy she looks around with interest, sometimes smiling, laughing or giving good eye contact. When she is feeling unhappy or has had enough of an activity she shuts her eyes and turns her head away.

Access device

A baseline assessment would give us the opportunity to decide which type of switch would best suit the pupils' individual needs. For Child Y it would enable us to discover a reliable, consistent and repeatable movement that she could make comfortably from her normal seating position. Several points needed to be considered:

- Physical functioning, which movements are voluntary and which involuntary? What is the range of movement? Is it accurate? How quickly can the movement be made? How much pressure can be applied?
- Is there any sensory impairment, which may affect the use of the equipment? Visual difficulties, hearing difficulties, tactile problems.
- Are there any perceptual problems? Hand-eye-coordination, tracking or scanning difficulties, problems with left or right side, spatial relationships etc.

The next step was to conduct an observation to establish a baseline which could then be used as a

comparison with future observation and a way of monitoring progress, if any. Both pupils were observed separately, the results of this first observation, along with the aims which were established are as follows:

Switching skills observation

Name: Child X

Age: 5 years 1 month

[Two new push switches had just been purchased along with three software packages for basic cause and effect, building and scanning, i.e. *Switch On Original*, *Switch On Travel* and *Switch On Zoo*].

One aim of the first observation was to see how much understanding of switch use Child X currently possessed. Could he press the switch? Did he need a physical or verbal prompt to press the switch? We also wished to establish if Child X had any understanding of cause and effect.

We recorded the time Child X remained on task. The software used was *Switch On Original*. One switch was used, placed on a desk in front of Child X. The software was set to *Picture Building* in 7 steps.

It was obvious from the onset that Child X was keen to start. He immediately pushed the switch, looking at the monitor to see what would happen. To begin with no physical prompting was needed but the teacher gave some verbal encouragement. It was clear that Child X did have a definite understanding of cause and effect because he was observed showing pleasure from the on screen reward, (smiling, pointing and looking at the teacher).

Although Child X had no difficulty in the physical pressing of the switch, he wasn't sure how to finish the picture to receive his reward. Almost every time he needed a verbal prompt to press the switch to complete the picture. Also, using this picture building software was an ideal opportunity to teach and reinforce Child X's means of communication, Makaton signing.

We decided to observe Child X's reaction to having two switches in which the correct switch needed to be pressed to match up with a picture on the screen. This task at first was too difficult for Child X; his reaction was to keep pressing the same switch. We decided Child X should concentrate on one switch until he became confident. As a progression another switch could be introduced so he could learn the skill of matching.

Outcomes of the first observation session – Child X

We developed an observation record sheet as a means of assessing pupil progress and decided on the following:

Learning aims for the pupil:

1. To complete a picture build and receive his reward with no physical or verbal prompting.
2. To sign the picture being built on the screen before it is fully revealed, with a prompt if necessary.
3. To use the signs without a verbal or physical prompt.
4. To use two switches and press the correct switch to match up with the appropriate picture.
2. To reinforce the action / reaction bond giving Child Y the opportunity to experience cause and effect using a number of different devices connected to a switch.
3. To reduce the number of physical prompts needed to activate the switch.
4. To reduce the number of verbal prompts in order to activate the switch.
5. To use a push switch as a simple means of communication eg to signal YES.

Switching skills observation

Name: Child Y

Age: 10 years 8 months

As with Child X, the first observation session was designed to establish a baseline. Because of the more profound needs of Child Y, we began the observation with Child Y using a pull switch (which she had used previously) attached to a disco ball. The main aim of this first observation was to see how much understanding of switch use Child Y currently possessed. Did she need any physical or verbal prompting in order to activate the switch? What was her current understanding of cause and effect?

Child Y was seated in her wheelchair with the pull switch and disco ball placed in front of her on the tray attached to the chair. The string on the switch was placed around Child Y's wrist, whilst the switch box itself was attached to the worktable with Velcro. Child Y has a slight up and down movement in her right arm which allows her to pull on the switch to activate the disco ball.

Although Child Y was observed pulling on the switch it was difficult to establish whether the movement of her arm was voluntary or not. We removed the switch to see if the arm movement still occurred and noticed the arm movement was significantly reduced. The switch was re-introduced so we could observe Child Y's reaction to the disco ball. Although some eye contact was made during the reward, it was very difficult to establish whether Child Y made an association with pulling on the switch and activating the disco ball.

As a further development we substituted one large push switch for the pull switch. Child Y had never used one of these switches before and needed much physical and verbal prompting to press the switch. As a result of this observation we realised how important the placing of the push switch was as an incorrect position could seriously affect the level of success.

Learning aims for the pupil:

1. To learn about continuous pressing i.e. the act of pressing and holding a switch active to achieve a desired effect.

Outcomes: Child X

From the baseline assessment we noted Child X had a good understanding of how the switch should be pressed (no physical difficulties), and understood something of cause and effect. The Switch Use Observation Record revealed that a number of important outcomes were reached. He progressed from a definite need for physical and verbal prompting to complete a picture build to no physical or verbal prompting. He became aware of how the reward could be achieved, therefore indicating some positive learning.

Another learning aim was to develop his communication through increasing his use of Makaton sign language. Progression in this area was slow and steady, with a number of interesting observations, e.g. Child X singing 'Happy Birthday' when picture building a cake, also independently signing 'dog' along with verbalising 'woo-woo'. By the end of the study Child X had successfully learnt a number of new Makaton signs and interacting with the software was aiding the development of his verbal language.

The final learning aim of being able to use two switches to match pictures has not yet been fully achieved. Child X found this skill much more difficult and so a number of progressive changes needed to be made to the set up of the switches. These adaptations have been successful in developing Child X's understanding. With practice these adaptations perhaps can be removed and Child X will be successful in using two switches without additional pictures.

Outcomes: Child Y

Child Y has more severe special needs. She could operate a pull switch, but it was not clear how much understanding of cause and effect she possessed. It was difficult to assess Child Y's reaction to a given reward. We decided to build upon her switching skills by introducing a push switch and allow her to experience cause and effect with a number of different devices connected to the switch.

At first Child Y needed much physical and verbal prompting to activate the push switch. After she

had been using the switch with the help of the class teacher on several occasions we noted physical prompts were no longer necessary, although verbal prompts were still needed.

Through the course of the study a number of interesting observations were made which helped Child Y's development and progress. The first was associated with the time given between prompts. At first prompts were given in quick succession, but by chance Child Y was left for a longer period of time with no prompt. This gave Child Y time to respond to the previous prompt and therefore carry out the task. In consequence it was decided to leave more time between prompts, therefore reducing the number of prompts needed. Giving Child Y more time also seemed to increase her concentration and time spent on task. Another breakthrough was observed when Child Y first began using a 'Single Message Voice Output Communication Aid' to answer 'Yes' to some closed questions. This skill continues to be practiced within the daily routine of the class, and is helping Child Y with communication and expressing her 'wants'.

The most significant observation came when a new piece of software was introduced, i.e. *Switch It Maker*. This software allowed the staff to produce cause and effect games of personal interest to Child Y. This seemed to be the key to unlocking further learning progress. Since beginning to use *Switch It Maker* Child Y's attention and reaction to rewards have increased and there is a definite improvement in her ability to use the switch with few verbal prompts.

In future we hope Child Y's switching skills can be further progressed to aid her communication, by allowing her to gain the attention of those around her by pressing a switch to make a bell ring or a light flash. Using more than one switch would take the communication a step further, allowing Child Y to differentiate the purpose of her communication – one switch for 'magazine' another for 'drink' etc. Because a solid base has now been formed, further learning can now take place, and the use of switches can be built into Child Y's daily routine and communication.

Conclusion

Professional development has been a key issue. As the ICT co-ordinator I have learnt new skills and become more knowledgeable and confident in this field of ICT. Skills based knowledge has been passed onto the class teacher of Child X and Y. In consequence the class teacher has herself become more confident in the use of ICT and has begun making more use of the resources available with other pupils in the class. The next step is to introduce and develop these skills throughout the rest of the school staff.

Child X and Child Y have been the first at the school to benefit from gaining access to ICT through alternative devices such as switches. Both pupils can now progress with their switching skills and develop further skills which will aid communication.

Software to help develop cause and effect

Switch It! Series, supplied by Inclusive Technology.
<http://www.inclusive.co.uk/>

<i>SwitchIt! At Home</i>	<i>SwitchIt! Diggers</i>
<i>SwitchIt! Gadgets</i>	<i>SwitchIt! Patterns</i>
<i>SwitchIt! Pictures</i>	<i>SwitchIt! Maker</i>

Software to help develop Switch Timing and choosing with switches

Available from Inclusive Technology:

- K1*
- ChooseIt! Maker*
- Drumkit*
- Choices*
- Blob for Windows*

Touch screen software to help develop hand-eye coordination

Also available from Inclusive Technology:

- Touch!* – uses visual discrimination to help develop touch or mouse skills
- Touch Balloons* – develops hand-eye co-ordination

MAPE is grateful to Inclusive Technology for permission to reproduce the photographs in this article.

Vintage 'cars' at half price!

Brian Richardson

Partner, Cambridgeshire Software House

A fraction over 20 years ago, Cambridgeshire Software House was one of just a handful of small fledgling companies specifically writing software for use in school classrooms and this year sees

what, for us, will be a very special anniversary. At that time, very few schools actually possessed a single computer, never mind a network, and there was a sense of pioneering both in schools and

throughout the educational software industry, such as it was! We had been trading for just 4 years and most of those other companies have long since disappeared from the scene but CSH has somehow managed to stand the test of time and so has one of our programs, *Cars – Maths in Motion*.

Many teachers and advisers will know this program well and so will the thousands of children who have designed and raced their 'cars' against each other over those years. *Cars* was absolutely revolutionary when it was published and when we took it to the MAPE Conference for 300 teachers to try 'live' shortly afterwards, it was on its way. I am pleased to say that there are still plenty of advisers and teachers who think that that is still the case even after all this time.

Cars started its life following a trip to Brands Hatch one Sunday. The next day when we were talking about the trip we decided that we would try to wrap some of the excitement we had experienced around something that had traditionally been boring – mathematics!

Originally programmed on an Acorn Model 'B' computer (and several more times since then!), *Cars* soon became a favourite in classrooms up and down the country and in places as far away as Australia. Many children were suddenly using protractors, measuring, calculating and using mathematics in a practical way for the first time in their lives and enjoying it! Suddenly they had become interested and motivated and the challenge of getting a car to finish and hopefully win a race was immense. With data provided by Lotus on 20 or so Grand Prix tracks, children were manipulating very complex information at a level they could understand and, perhaps more importantly, control.

Teacher training courses were based around the program and Local Authorities were recommending it as a 'standard' to their schools. By the end of the 1980s over half the schools in the United Kingdom had a copy of it in their software libraries. One of the highlights of my professional career was running an in-service training day for 30 or so teachers in Adelaide, Australia, on the practice day of the 1990 Australian Grand Prix. We could see the leader board through a window of the Teacher Centre and for those on the course the challenge was to match the efforts of the real cars and drivers who were whizzing past the Centre at about 150 m.p.h.! Such was the enthusiasm of those teachers, the day did not end until close on midnight with cans of lager being won by the winners of our races!

By now, the program was being written about in magazines and journals on a regular basis and teachers were starting to use it over and over again with their 9–14 year-olds. In 1986, it was the very first program to win *Educational Computing's* 'Top 20 Educational Programs' Award and the magazine featured a JPS Lotus Formula 1 Grand Prix car on its front cover to publicise the fact. At the beginning of the 1990s, simulation software became much less used in classrooms as teaching became more prescribed and throughout the next decade 'child-minding' software became much more popular in schools because it was easy to use in short bursts and required less dedicated time.

However, in 2000, some 17 years after publication, BECTa used the program as the basis for its 'Grand Prix On-line Maths Challenge' and at one point over 40,000 children were taking part in the competition. The Grand Final was held at Jaguar Cars HQ in Coventry and the Minister, accompanied by Greg Rusedski, came along to see what Formula 1 racing had to do with teaching mathematics and mathematical modelling (they also presented the prizes!). At the end of the day, Sanquhar Primary School, Dumfries and Galloway, won the first prize and the honoured guests left with the screams of 52 very motivated children ringing in their ears! Only this January, a similar event has been held in Wales in the presence of Jane Davidson, the Minister for Education and Lifelong Learning, Wales with Ysgol Gynradd Gymraeg Abercynon from Rhondda Cynon Taff running out the eventual winners.

Well, the program has now reached the ripe old age of 20 and it has been in our catalogue for every one of those years – a fact that cannot be said about many pieces of educational software. On the basis of 'all good things come to those who wait', simulation software is, once again, becoming popular in our classrooms as schools are looking to stimulate pupils in different ways and *Cars* gives them that opportunity.

To commemorate this anniversary, we are offering any MAPE member the chance to buy a single-user copy of the current PC program for just £25 + carriage and VAT (which is half price) until 30th September 2003. Just mention the special offer to MAPE members when ordering.

Additional information about *Cars* can be found on our website www.cshsoft.com or by contacting us at Cambridgeshire Software House, P.O. Box 163, Huntingdon, Cambridgeshire PE28 3UR or by phone on 01487 741223.

Working towards e-quality

A report on research carried out at Camelsdale First School, academic year 2001/2002, into gender and ICT in a YR classroom

Veronica Carter

Introduction

The original aims of my research were as follows:-

1. To investigate factors that influence attitude towards and achievement in ICT in a Reception class (e.g. gender, home access to computers etc.).
2. To investigate the impact of a range of interventions/approaches in raising the level of achievement of any low achieving groups that have been identified.
3. To investigate if the further application of such interventions/approaches can act to decrease the range of attainment in ICT within the class by raising the standards of low achievers.

I planned to use an Action Research Cycle for this research and, indeed, a personal aim was to improve my understanding of how to carry out Action Research.

This research built on a piece of whole school research carried out the previous year which found that our KS2 girls assessed themselves as poorer at ICT than the boys did, even though no actual difference in achievement levels could be found, and that girls expressed less enthusiasm about using ICT.

Observations

I kept a research journal in which myself and my teaching assistant would note down observations or relevant conversations with the children. Early analysis of these records showed that there were gender-based differences in the way the computers in my class were being used and this became the focus for further observations and data collection and for the planning of interventions. The vast majority of children had home access to computers so it was not possible to investigate this as a factor in ICT achievement.

My observations showed that boys tend to use the computers in loose groupings with plenty of use of language to pool ideas, share discoveries and express enthusiasm for the activity. On the other hand, girls have a tendency to use the computers on

their own, working predominantly in silence. When the girls did work together at a computer the use of language was also somewhat different. Girls who are watching a friend use the computer tend to wait to be asked before they volunteer an idea but will offer praise and encouragement spontaneously. Boys tend to speak freely, giving commands to the child at the computer, pointing at the screen, canvassing for support for their idea from the rest of the group.

Further analysis and reflection on the use of language at the computers revealed that boys were twice as likely to make positive comments ('It's easy', 'I like it', 'I'm doing well', etc.) than negative ones ('It's difficult', 'I don't know what to do', etc.). Girls made as many positive as negative comments.

There was also a difference in attitude towards working with a brand new piece of software with boys tending to want to jump straight in and find out for themselves just what it does whereas the girls tended to hold back, wanting to be shown what to do or to watch others using the software before they had a go themselves. My observations of how the children tackle new software was backed up by asking the children directly whether they prefer to jump straight in and have a go with a new program or if they prefer to watch somebody else have a go first. Six out of ten boys said they preferred to jump straight in with just two out of six girls saying the same. When asked if they preferred using a new or a familiar program, seven out of ten boys said they preferred using something new as opposed to three out of six girls. When asked to choose their favourite classroom activity out of home corner, train track or computer, six out of ten boys said computer as opposed to two out of six girls.

In a class discussion a boy referred to one of the computers as 'he'. I discussed the terms 'he', 'she' and 'it' with the class and then asked them what they thought a computer was. Nobody voted for 'she', 5 thought a computer was an 'it' and 13 thought a computer was a 'he'.

My ICT assessments of the children showed no discernible differences in ICT achievement based on gender.

Interventions

I often teach using my own *PowerPoint* files for whole class teaching, especially for phonics work in literacy and for number work. Observations showed that boys showed greater interest, and took more part in these parts of the lessons. Accordingly, one intervention I tried was to make such files specifically girl-friendly or boy-friendly by careful choice of background colour or clipart.

I had observed that girls tend to use the computers individually and without much, if any, discussion of what they are doing. I had also observed that girls tended to spend less time on the computers than boys. When boys are at a computer in a group they work out for themselves who will have the next turn and when it is reasonable for the current user to cede to the next. In comparison, girls tend to wait until a machine has no-one at it and then go and use it. To find out if girls would use a computer more if there was more often an unused computer for them to go to rather than waiting for a group of boys to finish at a computer I allowed the girls to decorate one computer and the boys another. This left two computers undecorated.

Effects of the interventions

Observations were made of the children's response to the new *PowerPoint* files with gender-specific backgrounds and clipart. The boys remained equally interested no matter what backgrounds or clipart I used whereas the girls showed greater interest initially in those files I had attempted to make girl-friendly. This was an initial rather than an enduring effect, but I am increasingly using a particular *PowerPoint* file once only as the number of such files I have available to me increases. For this reason an initial greater interest might be all that is needed.

Observations of the way the children used the decorated computers showed that the boys seldom used the computer that the girls had decorated and so it did become easier for the girls to find a quiet computer to go to. I noted, in particular, that two of the quieter, more reticent girls were spending considerably more time at this computer. Certain boys would still use the 'girl's computer' (as the children took to calling it) when no other machine was available but it was not the boys' first choice of machine.

Discussion

ICT can be a powerful learning tool and all children would benefit from being open to using ICT to support their learning. Although my assessments

showed the girls learning as much about ICT as the boys my research did show a difference in attitude towards using new software and a difference in their preferred way of using computers. The first is particularly significant due to the ever-changing nature of ICT. We typically assess children on how well they have learnt something that we set out to teach them. With ICT, the skills that are of importance right now are only of limited importance as they are unlikely to be the same as the skills that will be needed in the future. This is radically different from other subject areas such as in mathematics in which the skills necessary to know how to work out a given calculation remain constant over time, or in literacy when a spelling learnt today will still be relevant years later. With ICT it must surely be more important that children believe in themselves as people who can tackle new challenges on computers successfully, learning new skills as they go. Schools need to foster a positive attitude towards change in ICT. Children will need time and space to 'have a go', tackle new challenges and make mistakes, knowing that we all make mistakes and that mistakes can be very useful for pointing to the correct way forward. Mistakes can be learnt from and should not be something to be overly worried about.

If the observations from my own class during this year prove to be essentially in line with what is happening in other settings and with other year groups then classroom organisation will need to take into account the different ways in which girls like to use computers. Often shortage of hardware leads to computers being shared, which girls may be less comfortable with than boys. When children have free access to several computers, as in my classroom, care must be taken to ensure that noisy bunches of boys are not dominating the computer access. Decorating machines so that they are likely to appeal to either boys or girls seems an effective strategy for helping girls to find access to a quiet machine.

It is important for children to know the right technical language so they can talk about their work at the computers and share their learning; if girls tend to make less use of language when using computers then time needs to be set aside for class discussions about what has been found out at the computer so as to bring this specific language use into the classroom.

The whole issue of how you foster positive attitudes towards ICT with all pupils while allowing girls room to work in their own preferred way with computers is complex. It is important to keep trying to deepen our understanding of what is going on in our classrooms and to try to find ways to allow as many of our pupils as possible to benefit from all that ICT has to offer them.

Where am I going from here?

In my classroom this coming year I plan to arrange the five computers so that two are in a quieter corner and these two will be decorated in a girl-friendly manner. Two other machines will be moved into the construction bay. This will leave my main teaching machine in a neutral area. I am also planning whole-class discussions after new software has been introduced so that all can share their discoveries and their enthusiasm. I have mapped out a plan for the year showing when a series of new pieces of software will be introduced.

Carrying out this research has certainly helped me to learn more about action research and about a range of ways in which data can be collected. I

have also learnt the importance of taking time to reflect upon that data at a later time and of sharing one's thinking with others.

This research has also served to raise further questions in my mind; in particular, further research is needed into the question of whether in assessing ICT how well children have learnt what we have set out to teach them, is enough. The ever-changing nature of ICT implies a need to be confident when tackling new ICT challenges. How do we build such confidence or, indeed, assess it? This surely forms part of the larger assessment debate about whether we should settle for valuing what we measure or should we not strive to measure that which we value? This is an area in which I shall continue to observe and reflect.

ClozePro and TextThing

Bob Fox

University College, Worcester

The rapid increase in the availability of data projectors and interactive whiteboards in primary classrooms has opened up a number of possibilities for the effective use of ICT in the first half of the Literacy Hour, as a means of providing a focal point or matrix upon which literacy ideas can be explored by teachers and children together, interactively. This possibility has always existed for a teacher working at a single computer with a group of children in the next phase of the Literacy Hour, and the increase in the number of classroom assistants has made it more feasible as a strategy, though in my experience it is still a rarity.

In the MAPE Focus on Literacy (1998) I suggested that interactive teaching could benefit the use of *Tray*-like word-level software (including Topologika's *Sherlock*, and now MAPE's *Discloze*). I am interested in the development of any literacy software that can enhance or transform those potentially dull bits of the Literacy Strategy. Two packages that have something to contribute are Crick Software's *ClozePro* and Topologika's *TextThing*. *ClozePro* can be used profitably in Early Years contexts, for pupils with special needs, and through KS2 and beyond. *TextThing* is intended for children aged 7 and over.

ClozePro, as the name suggests, enables you to create cloze passages. The environment will be familiar to anyone who uses the excellent *Clicker 4*, and the same range of options – for speech, use of switches, inclusion of graphics and so forth – is available and works well. Creating your own cloze

passage is simplicity itself. Simply copy and paste a block of text from somewhere, select the words to delete, and let the program handle the rest. You have quick and easy control over almost every variable you may wish to adjust, including where you want to place the grid, or whether you want the choices to appear as a pop-up menu, or whether you want to enable prompts (e.g. having the first letter of the word appear). Screens can be linked to create a sequence of activities, and the program can produce a report for each user, showing how many correct responses have been made. My only niggle relates to that scoring system, which does not allow for the possibility that in some cases two words from the grid might be equally appropriate.

TextThing has a wider range of activities, and also gives you quick and easy control over a wide range of variables, so that you can tailor the appearance and functionality of the activity to meet the needs of particular individuals or groups. It comes with a substantial collection of short texts in a variety of styles and genres, or you can easily add your own.

Having selected a text, you can then choose from the nine different options. The first, 'Letter-by-letter', gives you a version of *Tray*, which operates quite smoothly. You can buy (or get) letters, and there is a means of peeking at the complete text. Some of these actions cost you points in the scoring system, and your score can also go down if you make incorrect guesses, which

I think is a mistake, as it could discourage the testing of hypotheses.

In 'Word-by-word' you reconstruct the text by selecting words from a pop-up menu. Though this works smoothly, it does not give you the opportunity to use context cues from subsequent words, so your predictions are often just guesswork.

'Scrambled words' anagrammatises all the words in the passage. 'Scrambled sentences' gives you several versions of the same sentence, with slight alterations in word order – this was actually harder to do than I expected. There is a fairly predictable 'Spelling test' section, a 'Sort text' section in which you reorganise sentences into the correct sequence, 'Punctuate', to insert missing punctuation, and 'Fill the blanks' as a straight-forward cloze activity. The last activity enables you to create rudimentary crosswords and word-searches based on the text in your chosen passage.

Both of these programs are designed to allow teachers to prepare materials for children to work

at independently or in a group, and both succeed in this admirably.

What I would still like to see, however, is a greater emphasis on activities that can be undertaken by teachers and children together, because very powerful learning can take place in the ensuing interactions and exchanges of ideas. Both of these programs could be used successfully in that context, but that is not really what underpins their design.

Factfile (prices exclude VAT)

ClozePro, Crick Software: www.cricksoft.com
Single user copy: £90; additional users: £14
30-day approval copy: tel. 0845 121 1691

TextThing, Topologika Software:
www.topologika.com
Single user copy: £44.95; multiple user licences available; unlimited site licence £109.95
30-day approval copies: tel. 01326 377771

Using LEGO *Robolab* in a primary school

Rob Humphries

Introduction

Thinking and talking were much on my mind on the morning of the MAPE Conference. This was to be my first time at Conference and I was going to be a speaker so I was wondering what it would be like. I'd had two bad experiences already that morning, one trying and failing to operate the door entry system at the college. The other was more successful because, after quite a lot of puzzling, I did get some much needed coffee out of a machine. I was starting to question whether I was the right person to talk to anybody about Control Technology!

I set up my laptop and LEGO equipment and hoped that it would all work all of the time.

Thinking and talking are at the very heart of Control Technology; I have certainly had to think and talk through the problems that introducing this subject into my school have caused. I am a Year 3 teacher and ICT Co-ordinator at a three form entry Junior School. My role was to support the three Year 5 teachers in the delivery of a unit that requires quite a lot of specialist equipment. Bear in mind that one of the early lessons had to be abandoned because very little of the equipment was still working and you'll get a flavour of how badly some of this process went. The extent of the technical problems

we have placed unreasonable demands on the three Year 5 teachers and on me. I don't believe anyone else should have to go through what we have; that's why I wanted to share our experiences.

This would be a tale of woe if the technical problems were not now on their way to being satisfactorily resolved. On the positive side, I have learnt a lot about Control Technology and my role as a co-ordinator in the course of the last few weeks. It's certainly got me thinking and talking!

Why did my school choose LEGO *Robolab*?

As in many schools, OFSTED identified Control Technology as an 'area for development'. I didn't know much about Control Technology but I wanted something physical rather than something being done entirely inside the computer: it had to be a real system, not a virtual one. Being honest, the main reasons we chose *Robolab* were because it was already on the school computers and I liked LEGO when I was a kid!

What is LEGO *Robolab*?

There are five main parts which, like LEGO, join together:

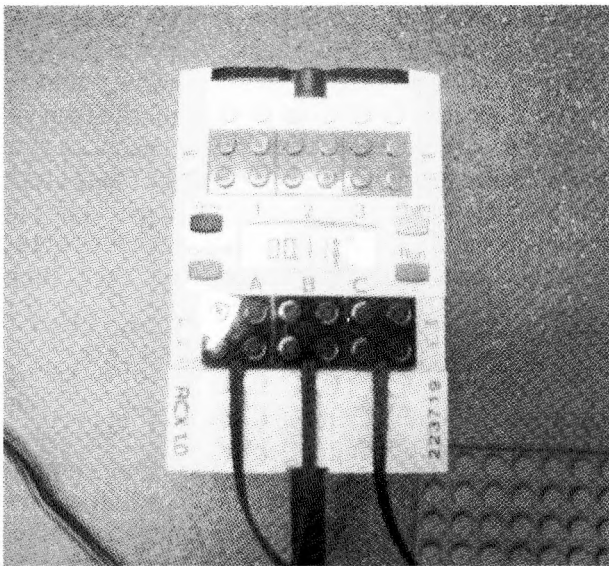


Fig. 1. The RCX.

1. The RCX

The RCX is the control box. It is a LEGO brick that can be programmed. It has three Outputs, A, B and C, which you can connect motors and lights to. It has three Inputs, 1, 2 and 3, that various switches and sensors attach to. It is about the size of a small tub of margarine and yellow.

2. Robolab Software

This is where you write your sets of instructions. LEGO say *Robolab* is an 'icon-based diagram building programming environment'.¹ I'm sure it is, but it's a lot simpler than that! It's very easy to make it do what you want it to. You just click on an icon on the screen and select from the choices on offer.

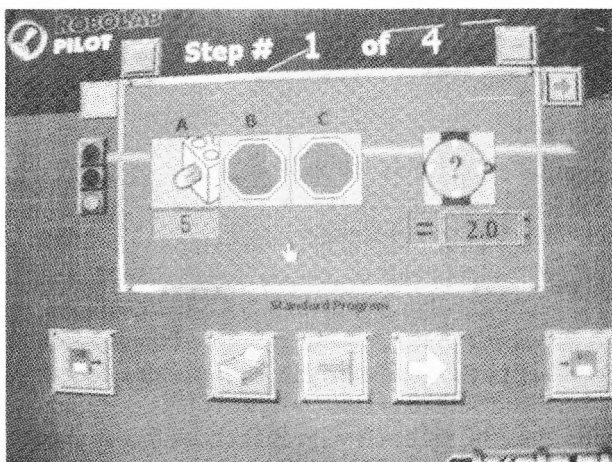


Fig. 2. The Robolab software.

3. Firmware

The RCX will not communicate with the *Robolab* software until you have downloaded some Firmware from the computer to the RCX. Firmware is

the computer program contained in a piece of hardware that tells it what to do. Then you can begin sending your own instructions.

4. An Infrared Link

The RCX receives its instructions from *Robolab* through an infrared link. These are attached to either a serial port or a USB port on your computer.

5. A LEGO model

You can follow LEGO's instructions or design and build your own models. The LEGO bricks you get in the Amusement Park or the Cities and Transportation sets are great and should fire any child's imagination.

At the simplest level of programming, you only need to click on two icons to make a model like a car parking barrier move up. For example, you instruct the motor to run anticlockwise or clockwise for 2 seconds. Then you send the instructions from the computer to the RCX and then press 'Run' on the RCX.

Your motor will start and, if you have connected it, correctly, your car parking barrier rises for 2 seconds. Of course, in my demonstration at the conference the barrier went down! My toast always lands face down as well; I think I am cursed!

What happened at my school?

A couple of years ago we spent over £800 buying four sets of the equipment and some training. The equipment was first introduced to our Staff at an INSET day. The training wasn't well received as it was almost entirely 'hands-off'. I don't think any of us went away with much confidence in the product or any real idea of how it could be used in the classroom, but we'd spent so much money and we had to do something so it couldn't just go to the back of the resources cupboard and gather dust.

This year our Computer Club looked again at how *Robolab* works. In the end, we grasped the basics, and, of course, a couple of the children got it very quickly. I then adapted QCA Unit 5E on Control Technology to reflect the equipment we had in school and planned a relaunch to the staff of our brand new computer suite full of XP computers with *Robolab* still part of the software package that comes with it. By now, we had five full sets of equipment and some extra boxes of LEGO bricks.

This time the staff training was 'hands-on'. From the start there were a lot of technical problems. A couple of groups of teachers did manage to program the sequence for a traffic light but, again, the failings of the equipment generated little confidence towards the product. The teachers in Year 5 bravely said they would have a go anyway.

The lessons

The plan was for an introductory lesson about Control Technology in the real world, followed the next week by each class playing with the equipment to see what they could discover. The children would then be given a series of activities, each a bit harder than the last, to learn the skills required. Then there would be an Integrated Task. The Integrated Task I set was to programme a traffic light as realistically as possible and then consider how it could be improved. It would follow a home-work activity in which the children were asked to write down the sequence of a standard traffic light.

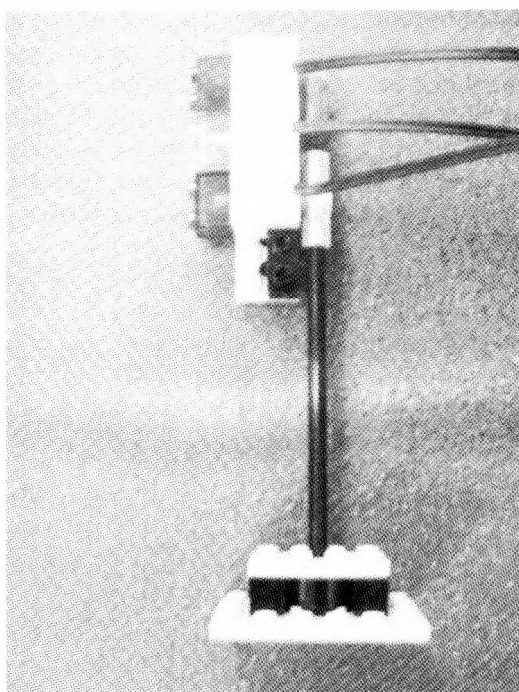


Fig. 3. A set of traffic lights.

We finished the six lessons just a few days before the MAPE conference so the results were very fresh in my mind. The project had become a success by the end, but it was a very, very close run thing. Several times the equipment nearly went back into the cupboard for good.

Why has it been a success?

Robolab provokes high quality talking and thinking. The level of thinking in the computer suite when the children were programming their car parking barriers and traffic lights nearly raised the roof! MAPE consider that 'Computers . . . can provide an effective focus for discussion and help to structure pupils talking, thinking and reasoning.'² This was happening all over the room as the three children in

each group worked together, puzzling over the procedures required. There were so many 'Eureka' moments when the model did exactly what the group intended. I think 'Eureka's are what teaching is all about, because it tells you that a child gets it, and gives the teacher a much needed boost. There were some wonderful discussions from children of all abilities, including those who were beginning to relate their models to what happens in real life:

'The big roundabout in town is rubbish, you can't get round it without being stopped by the traffic lights.'

'Maybe they should programme it differently.'

'Maybe it's deliberate . . .'

We tried various ways of grouping the children and ended up with their working with two friends from their Maths groups. This did at least give us a sense of the differing abilities of the children, although any method of grouping feels like a compromise. To start with there were some free-riders who chose to take little part but that was part of the teacher's role to try to engage them in the task. There were a couple of mavericks who tried to programme at much higher levels when they thought no one was looking but they tended to come unstuck when they were brought back onto task. In general, the children were too involved to misbehave. They coped very well with the technical problems.



Fig. 4. Collaborative working.

Teaching input at the beginning of the lessons was kept to a minimum, just a brief reminder of 'the basics'. The tasks were provided on paper. At all times the children were encouraged to go back to an easier level of the software if they wanted to test something out or remind themselves what they had done before. I was pleased to see a number of groups choose to do this. They tended to be the ones who suddenly made rapid progress a couple of minutes later.

As each group finished their activity the next one

was set. The children liked this as it kept them challenged. One group designed their traffic light quickly and were trying to find a way to improve it. They asked for a touch sensor and were on their way to adding that into their instructions when they ran out of time. Another group experimented by turning their traffic light around so that a road junction could be controlled by one traffic light. They quickly realised that this had a fundamental flaw!

Overcoming the technical problems

There are a few things you can do to give yourself the best chance of having a trouble free session. The following is a summary of my personal opinions. This is based on my experiences, what the Year 5 teachers have said to me, some advice from LEGO and valuable assistance from one of LEGO's approved partners:

- Use the latest version of the software. As of April 2003 it is v2.5.2. Earlier versions of the software are obviously not as good as this one. Don't assume that even your latest computers will have this version when they arrive. Our new computers were sold to us less than a year ago with *Robolab* software on them that had been superseded about 3 years ago!
- Only use USB Infrared Links. The Serial Port Infrared Links rely on the battery inside them. When we used the serial ports we had endless problems with the infrared signal being sometimes too strong, so that it affected other machines in the room ('cross-pollination' apparently!) and sometimes too weak so that the Firmware would not download. Any other infrared devices in the room will also affect the signals. We found covering the equipment with a cardboard box was the best short term remedy but we plan to replace all our Serial Links with USB ones before the equipment is used again.
- Get a large supply of good quality rechargeable batteries. We bought some AAs from a reputable source that were a bit smaller than they should have been. They kept losing their connections inside the RCX brick and causing the power and the Firmware to be lost! Keep spare batteries charged up. When the RCX starts bleeping you have 2 minutes to replace the battery before the Firmware is lost.
- Leave the batteries in the RCX so that the Firmware remains in the RCX once it has been downloaded. This will save the children repeatedly spending 4 minutes downloading it. I have managed to keep the Firmware installed on an RCX for several days on one set of batteries, purely in the interests of research, of course!
- As an alternative to batteries buy LEGO Mains Adaptors. Even if the RCX is turned off, it will retain its Firmware if the cable is kept plugged into it. Again, purely academically, I kept Firmware in an RCX for 4 days that way! We use Mains Adaptors at school for our RCXs although I think in future I will use a combination of both. It would be difficult to design, build and run a LEGO car using a mains lead!
- The models that LEGO instruct you to make are engineering masterpieces. But they break awkwardly when they move incorrectly, for example when the children are trying to program them and get their timings wrong! To avoid spending whole lessons fixing these complicated models, simplify them as much as possible. Make key parts like the barrier on the car park barrier fall off if it hits anything. It can then be fixed back on in an instant. I am still not sure whether I want to glue the rest of the models together. I would be interested to know what other people think.

Questionnaire

After the series of lessons, the children were given a Questionnaire to help us decide if we should use *Robolab* next year or find something else. These are the results from one class:

1. Did you enjoy the lessons on *Robolab*?

Yes: 24 Not sure: 1 No: 1

2. What do you think could be done better in the lessons?

They thought: more lessons, more time to do tasks, more help, better explanations, smaller groups, more equipment, not having to keep downloading Firmware and more LEGO models.

3. Do you think *Robolab* should be taught to next year's Year 5s?

Yes: 26 No: 0

4. Would you like to carry on using *Robolab* in Year 6?

Yes: 23 No: 3.
One of these children said it was too complicated, one that it never worked!

5. Do you think we should buy more LEGO equipment so everyone in a class could use it at the same time?

Yes: 23 No: 2

6. Do you have any other comments about using LEGO *Robolab*?

These included: Firmware very slow to download; we are looking forward to more complicated programming; *Yes, it's amazing!*

Assessment

By accident I think we may have discovered a very effective form of assessment. It is certainly new to me, but then I haven't been teaching for long. Thanks to the support of our Headteacher, who spent the morning with my Year 3s, I taught the Integrated Task lesson to each class in Year 5 and then dealt with the technical problems that arose. Each Class teacher spent the whole lesson assessing their class against criteria adapted from the QCA Expectations. By the end of one lesson most children had been assessed. A pleasingly low proportion had made 'less progress' than the average child. The findings suggest, not surprisingly, that the children needed more time to show their full capabilities, but that the progress they had made, especially given that it was a new topic to us all, was very encouraging.

Conclusion

By the time the lessons were finishing it was obvious that the children loved *Robolab*. One class have asked their teacher if after the Easter holidays they can design a model village with LEGO controlling it. It would be great to give them the chance to design an Amusement Park using all the bricks that they haven't had a chance to use yet. Year 6 are hoping to start the same series of

lessons after SATs, but they will only do so if our computers at school will install and run the latest LEGO software and we have purchased USB infrared links. Ideally, we want to buy a lot more sets of the equipment now that it has come down in price. This is partly because of new competition in the market. As far as I am concerned, we will be sticking with LEGO.

Because of my work getting ready for the MAPE conference, I have been invited to find out about LEGO *Robosoccer*, which sounds excellent.

I have had the latest versions of *Robolab* software and the USB Infrared Link on trial for a few days. All the equipment has worked first time, all of the time so far. I did hope that it would work perfectly at the MAPE Conference. Those of you who saw my talk know that the technical bits worked from beginning to end without a hitch. Would that they could say the same for the human operator!

One child in their Questionnaire made the best observation of our findings so far:

'I think when it went wrong it went wrong but when it went right it was excellent.'

References

1. Quoted from the website: www.lego.com
2. *MAPE Focus on Teaching Thinking and ICT* (2002). Introduction by Steve Higgins and Nick Packard, p. 4.

Sort It Out: an integrated approach to data handling

Geoff Davies

ICT coordinator at the Grange Primary School, Swansea
geoffrey@daviesg54.freemove.co.uk www.grangeschool.co.uk

A version of this article is available on-line at:
www.grangeschool.co.uk/children/datahandling
 {R} signifies a resource which is available on-line.

Introduction

Data handling, which is essentially a sorting and classifying activity, appears in various guises throughout the primary school: The nursery class child sorting *Compare Bears* into sets according to colour or size, the reception class child using *PB Bear* to sort the birthday presents according to the

shape of the package, and the Year 6 pupil using a key to identify a rock pool animal are all examples of sorting and classifying activities which are undertaken across the primary range both at and away from the computer.

A number of specific references are made to data handling in the National Curriculum with mathematical and scientific contexts springing readily to mind. However, the generic nature of data handling means that a whole range of learning objectives can be addressed through its use. Data handling lends itself well to development of children's language, especially where technical

language is concerned and data handling can contribute to the development of problem-solving and thinking skills as well. When data handling is thought of in terms of ICT, teachers generally think of flat-file applications such as *FindIT* or *Textease Database*. Possible uses for flat-file databases in the primary curriculum are endless and could range from a database of African countries, to pupils' achievements in athletics, through to biographical information about musical composers. Applications that are not so readily taken up are branching databases and spreadsheets though here again there is plenty of opportunity in the curriculum to exploit their use.

ICT should never be used for its own sake. Rather it comes into its own when its potential effectiveness in achieving particular learning objectives has been identified and planned for and when its use would make teaching and/or learning easier, better or different. If the use of ICT can be dovetailed with conventional classroom activities then all the better. On one level this provides an effective strategy for organising a class around a limited number of computers but more importantly the pupils' concrete experiences when working away from the computer can help to inform their knowledge and understanding when working 'virtually' at the computer and vice versa. Teachers who are reluctant to use ICT can often find it reassuring to see an ICT activity mirroring a learning experience that is being carried out in a conventional and concrete way. A teacher's confidence and progress in the use of ICT often develops when that teacher begins to graft the ICT on to the rootstock of existing good practice. Data handling in the primary school is well suited to this integrated approach.

Data handling activities

Outlined below are some data handling activities that I have used in the classroom to support various aspects of the curriculum.

Activity 1

A 'Whodunit' style scenario provides the context for data handling. {R} 'The Mystery of the Vanishing Sandwich' sees Paddington Bear become the victim of a crime. Pupils have to carry out sorting activities at and away from the computer to help the local police find the culprit. Clues to the criminal's identity are hidden within the story and

by carrying out (a) a conventional sort using picture cards, (b) a sort using a branching database and (c) a sort using a spreadsheet the children are able to 'sort out' and pinpoint the culprit.

(a) *Conventional sort*

You will need to produce sets of character cards for sorting. (We had a number of sets of the children's board game 'Guess Who' in school which contain an assortment of cards ideal for this purpose.) The children need to practise posing and answering closed questions in the '20 Questions' style: *Is it a male? Does he have a beard? Does he wear glasses?* These types of questions require a simple 'yes' or 'no' answer.

Working in small groups the children sort the cards according to a clue gained from the story, e.g. if they learn from the story that the criminal is a woman they can pose the question, 'Is it a female?' They then sort the cards into two piles, the pile on their right being cards that answer, 'Yes, it is a female' and the pile on their left being, 'No, it isn't a female'. The 'No' pile can then be discarded and the process continued with the 'Yes' pile until only one card is left which would match all the clues. So in our scenario the culprit would be Betty who matches the clues (i) is female, (ii) has white hair and (iii) wears red glasses.

(b) *Branching database*

The children can use a branching database such as *Textease Branch* to try to find the culprit. {R} The characters are sorted on-screen by the children posing closed questions that are based on the clues they have found in the story. This 'virtual' experience helps to reinforce the work carried out practically in the first activity.

(c) *A spreadsheet*

The children can use their 'character cards' to complete the missing column of the spreadsheet. {R} Therefore, by posing 'yes' and 'no' type questions the children can sort the cards and eventually find the missing name. In the example below the character's name is missing but all the other characteristics are known:

So beginning with all the sixteen character cards the children could ask, 'Is it a male' and sort the cards into two groups based on the answer to that question. The female pile, those answering, 'No, it is not a male', would be eliminated from the sort and the children could further sort the 'yes' pile by posing a second question such as, 'Is he bald?' This process would continue until only one card was left

	a	b	c	d	e	f	g	h	i	j
1	number	name	gender	hair colour	eye colour	hat	glasses	eyebrows	beard	moustache
2	1		male	bald	blue	no	yes	bushy	no	no

with all the others having been 'sorted out'. The characteristics of the remaining card should match all those in the first row of the spreadsheet when the missing name can be filled in. The children can carry on in this way to complete the whole spreadsheet. {R}

An extension to the original spreadsheet includes data on age and height and offers the opportunity for more numerical analysis. {R}

A further extension to this activity would be to transfer the data from the spreadsheet to a flat-file database and to prepare a set of questions for the children to interrogate this database with. Older children can use the additional numerical data to extend the complexity of their searches and provide opportunities for graph work.

Activity 2

The first part of this activity allows the children to use *Branch* to sort a set of animals according to the children's own criteria. {R} Here the opportunity arises for some written work where the children can describe each animal according to the way it has been sorted in the branching database. By clicking on an animal in the branching database a red line appears which tracks the animal through the questions that have been asked during the sorting. I would ask the children to imagine what each animal would say about itself. {R}

Older children would need to sort the animals according to more specific criteria. To start with, I would introduce the children to the *Vertebrates Classification Sheet*. {R} I would show them an example of what an animal might say about itself using this more detailed and scientific information. {R} I would then ask the children to go back to *Branch* and sort the animals using the technical terms and knowledge they have recently acquired. The resultant database might look something like this: {R} The children can now click on one of the animals in the database and look to see how the red line tracks through the various questions. The children can use this as a basis for the 'animal saying' task that might turn out something like this: {R}

Activity 3

This activity would involve the use of *Branch* and a set of digital photographs of the children in the class. I would use an interactive whiteboard to sort the children's photos according to their own suggestions. {R} To reinforce this sorting I would physically move the children into sets around the classroom to correspond to the sorting taking place on the computer. A digital camera could be used at the different stages of the sort to illustrate to the

children how their grouping matches the branching database. There is scope here to create a 'human' Venn Diagram or even a 'human' branching database.

Activity 4

A branching database can be useful in a mathematical context when working with shapes. If you've ever asked a child to differentiate a square from a rectangle you will be aware of the need for the child to have access to technical language as well as a knowledge about the properties of shapes. {R}

Activity 5

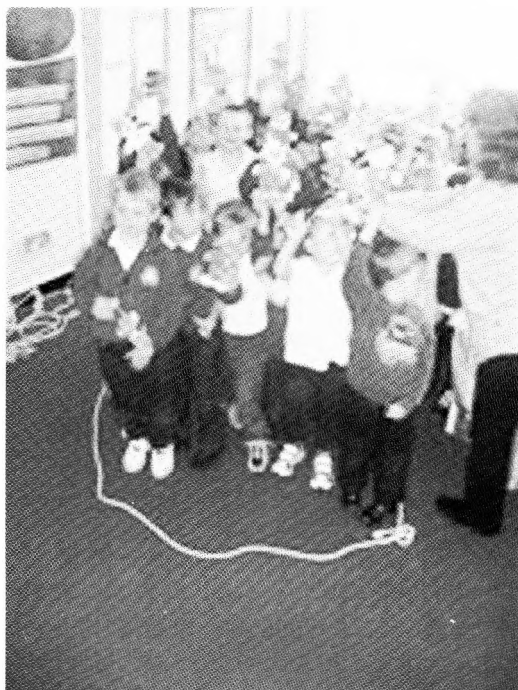
MAPE members were given language resources produced by Warrington LEA a little while ago. Some of the activities involved sorting words to reinforce a particular spelling rule. {R} These activities provide another possible context for using a branching database: The children would be given a selection of words and they would have to sort them according to observable features or their prior knowledge of spelling rules and patterns.

Activity 6

I carried these activities out with a Reception/Year 1 class. First of all, the children were introduced to a pictorial flat-file database, *1st FindIT* and the 'Teddy' option. I had prepared a pictorial data capture sheet and the children were asked to colour in the various parts of the teddy and his clothing. The children were limited to using only the colours they would later encounter in the computer program. {R} The next step was to work at the computer and transfer the data from their colouring sheets into the database. By the end of the week the database contained twenty-six records in the form of a coloured teddy for each child in the class. {R} The next step was to print out and laminate a large-scale teddy for each child. Once this was done, we were ready to embark on some practical activities:

(a) Venn Diagram

This activity involved the use of two ropes, the laminated teddies and an interactive whiteboard. Two circles were made with the ropes on the classroom floor and the children were asked to look carefully at their teddy. They were then asked a question and had to stand inside a rope according to either a 'yes' or 'no' response to the question. So when they were asked, 'Does your teddy have blue shorts?', the children either moved inside the 'yes' circle or they moved inside the 'no' circle.



This was repeated a few times with different questions and once I was confident the children understood what they were doing we moved on. This time the children were asked a question and moved to the appropriate circle. Instead of remaining inside the circle they were asked to put their teddy on the floor and to move away. We then viewed the circles from a distance and the children had to answer various questions such as, 'Why are those teddies in this circle?', 'Why are those teddies not in this circle?' and 'How many teddies have a blue hat?'

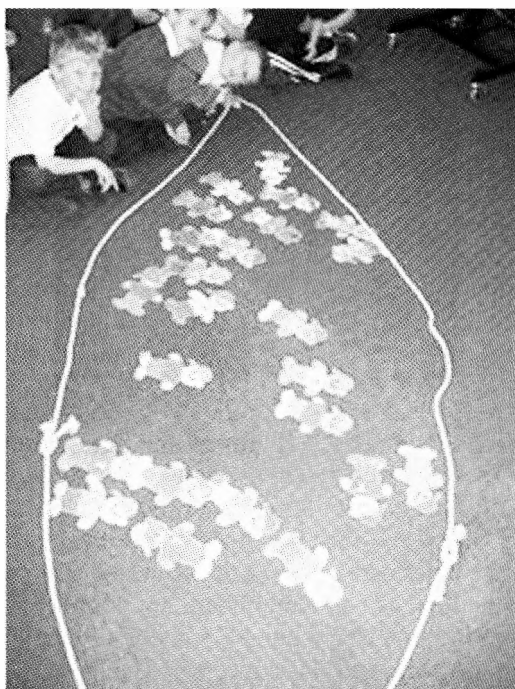
I wanted now to use the interactive whiteboard to replicate the practical experience and hopefully consolidate the learning. I had used *Textease* to create a 'Venn Diagram' and a page of 'teddy cards'. The children took turns to sort the teddies on the whiteboard. I asked questions such as, 'Does the teddy have red shoes' and the child had to drag and drop the teddy into the correct set on-screen. They seemed to enjoy this experience and this led us on to the final part of the activity. Here the children were provided with a set of small-scale teddies and two different coloured card circles. In response to my different questions they had to sort their teddies into 'yes' and 'no' sets.



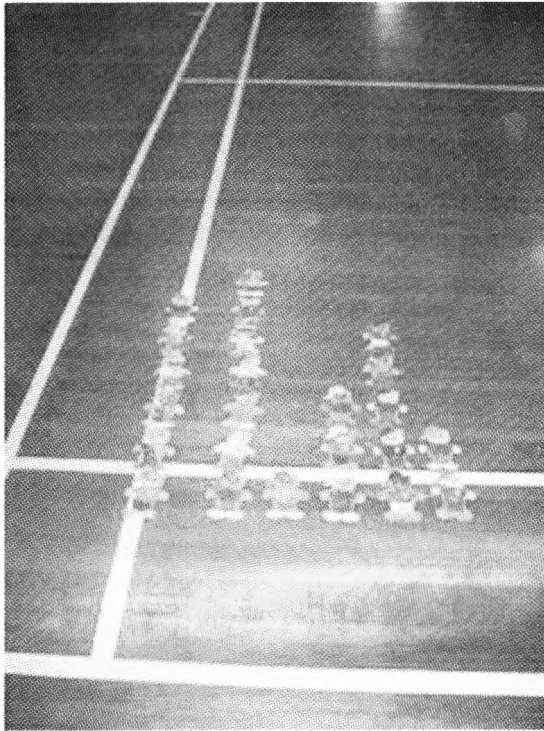
It was apparent that the children were using the learning gained from their earlier practical and ICT experiences to carry out this last task

(b) *Early graphs*

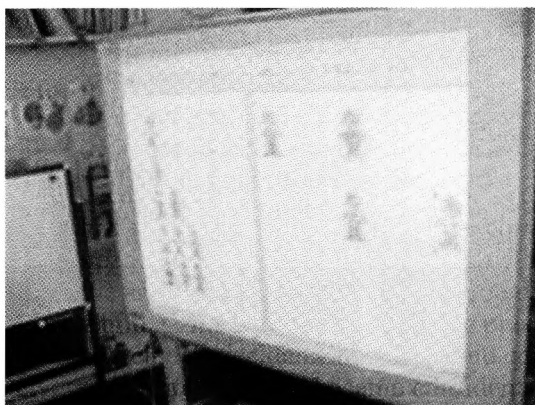
I was now keen to use the teddies to develop the children's use and understanding of graphs. Again I used the sets of laminated teddies, the interactive whiteboard, some *Textease* resources, paper and pencils. First of all we went into the school hall with the large teddies. The children were asked to stand in lines according to their teddies' different attributes. So when they were asked to stand in lines according to the colour of the teddy's hat this is how they organised themselves:



Afterwards I asked the children to arrange their teddies in lines on the floor and to sit on the steps of the hall stage and view the teddies from this elevated position. They had a view now of the picture graph (pictogram) which they had created earlier when sitting in lines:



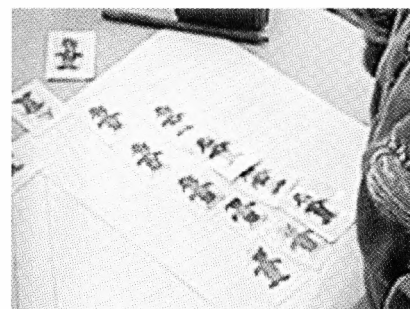
To consolidate this work we returned to the classroom. The children were given a set of small teddies and a grid drawn on paper. I stood in front of them at the whiteboard and I posed the question, 'How many teddies have a blue hat?'



I showed the children how to arrange the teddies in a column on the whiteboard. I then repeated the question with a different colour and showed the children how to arrange these teddies in a column. When I had sorted all the teddies it was their task to arrange the teddy cards accordingly on their paper grid to produce their own pictograms.



This task was repeated a number of times until I was confident the majority of the children had understood the concept of a pictogram. To finish off I asked the children to use coloured pencils to draw their own pictogram of the teddies' fur colour.



Some additional Early Years activities

Sorting and classifying activities feature regularly in Early Years software. It's possible to create your own activities using a desktop publishing application such as *Textease* as well. There are some examples of these: a shape sort {R}, a colour sort {R}, a letter sort {R}, and a number sort {R}.

Wireless networking

Nick Tumber

Macs in my School Ltd.

nick.tumber@macsinmyschool.co.uk

May we work on the premise that networking computers is a good thing? Up to now, the only way to achieve this was to use wires. Installation is expensive and the computer suite has been an inevitable consequence of this. If you believe computers should be in classrooms (rather than classes in computer rooms), you will welcome wireless networking because it is cheap and can go anywhere. You can emulate the silly ad where the man sits at a desk in the middle of a football pitch but you don't need a special processor nor a special computer and it could be your desk in your classroom, or the staff room, or the playground.

You will need a card and software to run it but it will go into pretty much any computer. This card has the aerial and it picks up signals from one or more base units around the school.

These base units can now be made to work in different ways.

Standard classroom

You need a network socket to plug the base unit into. All the computers in a range can connect wirelessly to that base unit and so become part of the network. The signal may well spread much further than that one classroom so it may be worth fixing a base unit (i.e. screw it to a wall or cupboard) to cover several rooms.

A bonus of the new generation of base units is that they come with a USB connector for a printer.

Roaming

Roaming is wonderful if you carry a laptop with you because you get continuous network coverage. It's just like the way a mobile phone works, switching from cell to cell. With three or four base units you may be able to cover the whole school. Each base unit has to be plugged into a network socket so some wires may need to be installed. This way you stay connected as you move around, seamlessly switching from one base unit to another with no break in network connection.

Bridging

You can use base units to bridge gaps between buildings or within a building where using a cable

would be difficult. The base unit in the main building has to be plugged into a network socket. The two units are configured to talk to each other. (One base unit can transmit to a maximum of four other base units.)

With this arrangement roaming does not work but for desktop computers that is not a problem. Changing buildings with your laptop would require a change of connection. Your laptop will do that automatically but your network connection would be interrupted.

Relay classroom

A base unit can act as a relay station between other base units. All it needs is a power socket. This is an extremely useful arrangement because you can set up a chain of base units.

Imagine a corridor with classrooms off it. You have a set of laptops you want to use in each of those rooms. Put a base unit in each one. Somewhere one of them has to have a network socket to connect to. It then transmits to the one next one. That one transmits on to the one after that and so on. Each base unit can have a USB printer plugged in.

The class set of laptops arrives, connects automatically to the strongest signal and you can print to the printer.

So that's how they work. It sounds all right in theory but what about practice?

Range

The range is a bit of a thorny issue and how your walls and floors are constructed is important. Old buildings tend to have solid brick walls but wooden floors so the signal is best up and down whereas modern buildings have concrete floors and partition walls so the signal is best sideways. You have to be prepared to experiment.

Using the internal antenna in an Apple base unit gives a range in air of 150 feet. An external antenna increases this to 250 feet. A directional antenna increases it further in one direction.

Range is also determined by the computer. Laptops with PCMCIA wireless cards seem to be less sensitive than laptops which have built-in aerials.

But unless you want to be like the man in the ad, you will have base units in relay mode (so you have a printer) and, unless your classrooms are huge, there will be no problem.

Speed

Another thorny issue and one not easily resolved. Here are some numbers: 10, 11, 54 and 100. About 6 years ago wired networks ran at 10. Now they run at 100. First generation wireless ran at 11, now at 54. So it looks pretty good. Unfortunately there is a drawback to do with the technology, and server-dominated networks (where applications run from the server rather than the local machine) will perform relatively poorly.

But keep it in perspective: suppose you have 25 computers connected to a 54 base unit, that's better than two each. On the same number scale, your broadband connection is 0.5 and your modem is 0.05 – so internet browsing is going to be limited by your internet connection not by the wireless network.

Cost

Wireless cards for a computer cost about £50 and base units about £150. You may need help setting them up. Some cabling may be required to set up roaming cover for the whole school. Non-roaming cover using base units as relay stations does not require cables.

In conclusion, all that needs to be said is that, like so many other things, once tried you will always want it. In my job I visit different schools all with wireless networking. My laptop connects automatically. I can pick up my e-mail wherever I am in the school. Teachers carry laptops around with them. Children carry laptops. They print their homework, swap files, check their e-mail – do all the things we all use computers for. It is not cool: it is just what they do.

And it was inspired by wireless networking.

Crossing continents – using e-mail in the primary school classroom

Roy Topping@halsnead.demon.co.uk and Lorellyn.Tomlinson@eddept.wa.edu.au

Throughout the last school year we undertook a series of e-mail exchanges between our two classes. Using e-mail on an international level provided the children with a real reason for writing, an opportunity for collaborative work on a large scale and perhaps most importantly the motivational aspect of an audience for their completed work.

The benefits were immense, not only did the children use various forms of ICT independently but we also feel that the learning in many subject areas was greatly enhanced. Below are our summaries of our e-mailing experiences.

Roy Topping

Year 5 Teacher, Halsnead Community Primary School, Merseyside, England

A short while ago my school took part in an experiment with Salford University where a form of 'teleportation' took place. A teacher in the University buildings conducted a science lesson that was shown to a Y6 class via a holograph. The holographic teacher actually appeared to be standing at the front of the class; she took the register, answered questions and drew diagrams through the use of an interactive 'Smartboard' that was linked to the system.

The children responded extremely well to the lesson, which was well delivered, and to the motivational element of being taught by a teacher who was

actually, at that moment in time, in another city. After watching the demonstration lesson I thought about how I could do something similar in my classroom. Obviously I couldn't voyage into the world of holograms but I realised that e-mail could provide a teaching stimulus that gave the children in my class direct contact with children a distance away.

I have a sister in Australia who is a teaching assistant and asked her if any teachers in her school, Mindarie Primary, would be interested in an e-mailing link. She put me in touch with Lorellyn Tomlinson, who also wanted to employ the use of e-mailing in her teaching.

Prior to starting the link we both let each other know what we required from this project. My aim was to give the children in my class a real purpose for writing, developing not only ICT skills but also using English beyond the Literacy Hour and to provide an audience for their work. Through the use of e-mail we planned our activities and organised our classes into 'e-mail partners'. Due to the management of 30 e-mails being sent simultaneously we decided to have the children communicate in small groups or pairs.

The first contacts were made as the children's initial e-mails introduced themselves to each other, describing families, hobbies and pets. Each day the website would be checked for new e-mails by the e-mail monitor, who was changed on a daily basis so allowing all the class to assess the e-mail inbox page. Whenever mail was received a cheer went up and these e-mails were eagerly read and then answered.

Once the children had been introduced to each other then work began on the main objectives of the project.

Studies of the local environments

We began with the school environment where we compared timetables, subjects and school organisation. The children soon spotted the similarities between the two schools and were intrigued by the different subjects that were taught in Australia.

The local environment also proved to be an area of fascination as the Mindarie children described the different animals, birds and flora found in their locality, all of which appeared to be far more exotic than our own! This led to a mass of voluntary personal research using both traditional paper methods and the Internet.

Weather data comparisons

Weather data was collected on a daily basis (temperature and rainfall) and transferred to Mindarie at the end of each week. Unfortunately our cooler and rather wetter-than-usual summer didn't provide the hoped-for extremities in weather between the two school locations. As well as reading weather measuring instruments the children placed their collected data and that of Mindarie into spreadsheets producing graphs that compared the weather recorded at the two schools.

Writing a collaborative story

The collaborative story was begun at Halsnead and the task ahead was explained to the class. A vote was held as to which genre of story to use. Horror was the clear favourite!

The Halsnead children were divided into pairs or trios and working together they composed and redrafted atmospheric story starts, focusing on vocabulary and grammar. These were then forwarded to Mindarie where the story development and conclusion were completed. The stories were a great success. The children were thrilled when they received their completed stories, eagerly reading and comparing the finished products.

Using e-mail on an international level has provided the children with a real reason for writing, an opportunity for collaborative work on a large scale and perhaps most importantly the motivational aspect of an audience for their completed work.

Lorellyn Tomlinson

*Year 6 Teacher, Mindarie Primary School,
Western Australia*

One of our biggest challenges in today's educational field is keeping our students motivated and on task.

We are constantly being told that this is the key to learning today. However, in an age of Sony playstations, Nintendos and instant gratification this is becoming increasingly difficult. Part of my role as a teacher is to ensure that my pupils are being prepared to take an active role in society when they are older. For this reason technology use is becoming very important. But how to make it 'real', fun and motivating?

Our Curriculum Council in Western Australia has developed the 'Curriculum Framework' for educators in this state to use as our founding document when planning. In this document there are thirteen 'Overarching Learning Outcomes', which should be referred to when planning programmes for the classroom. Obviously not all Outcomes can be reflected in any given programme but when you can find a series of lessons or activities that cover many of them it is extremely beneficial to you as an educator to leap at the opportunity. This programme run between Roy's class and my own covers seven which are listed below:

- Students use language to understand, develop and communicate ideas and information and react with others.
- Students recognise when and what information is needed, locate and obtain it from a range of sources and evaluate, use and share it with others.
- Students select, use and adapt technologies.
- Students understand and appreciate the physical and technological world and have the knowledge and skills to make decisions in relation to it.
- Students interact with people and cultures other than their own and are equipped to contribute to the global community.
- Students participate in creative activity of their own and engage in the work of others.
- Students are self motivated and confident in their approach to learning and are able to work individually and collaboratively.

Our programme happened very quickly. When one of the staff here at Mindarie Primary School mentioned that her brother in the UK was looking for someone to do an e-mail exchange I jumped at the opportunity. After an in e-mail introducing ourselves, Roy and I have exchanged e-mails at a rapid pace, exchanging ideas and planning activities. The endless possibilities we saw for this project would have made it quite possible to ignore all aspects of the formal curriculum and still not have enough time in the day to cover everything we wanted to do.

We began slowly by pairing up the students and sending group e-mails introducing ourselves. My class thoroughly enjoyed the fact that the lesson was real. The e-mails were going to real people for a real purpose. The motivation level was rapidly increasing.

When the e-mails returned they eagerly sat down to compose replies (this from a group that consisted of several reluctant writers). We soon began com-

paring schools and surrounds. It was beautiful to see one child who had experienced difficulty in understanding seasons and hemispheres in a more teacher-directed activity suddenly turn to me in a very articulate manner and explain how his buddy's school was in Summer because they were above the equator while it was Winter here. The reason he knew? Because his buddy told him so which made it an undeniable fact. Apparently that had more weight than me telling him with lots of diagrams and models.

The first time we sent an e-mail some of my charges waited for an instant response (I had just finished explaining how quickly the e-mail system worked). Learning about time zones and how they worked became necessary and it was extremely rewarding to note that even my weaker mathematicians began to comprehend that when we were at school our Epals were sleeping. So now they understand time zones, hours ahead and hours behind. If only I could get them to understand the principles of 'carrying the ten' as easily!

When the story starts arrived my students were preparing for the Western Australian Literacy and Numeracy Assessment (WALNA) testing, part of which involved narrative writing, so it was a great opportunity for them to hone their skills. I noticed that students who usually rushed their work were taking a lot of time to compose their endings and ensure that they were interesting and entertaining. I commented on this and received looks of amazement in response.

'But these are for our buddies', was the reply.

Apparently doing it for the WALNA testing was not as important as writing for a buddy who was relying on them to turn their beginning into a masterpiece. The result was an outstanding success.

It was with great sadness that my children wrote their 'farewell' e-mails. They composed and rewrote them a few times as they wanted to get their words 'just right'. It is a measure of the popularity of this program that my students have asked several times since when we will begin our contact again.

This is an invaluable tool. If you are not fortunate enough to have a contact overseas as Roy and I were then you could utilise the services of sites such as Gigglepotez (<http://www.gigglepotez.com>). This website has registered schools from all over the world who are keen to exchange, from the simple (such as snail mail) to the advanced (chat, webcam, etc). Another excellent site is Ozteachers (<http://rite.ed.qut.edu.au/oz-teachernet>). Their travel buddy project is extremely popular. This is where you and your buddy school exchange buddies (usually soft toys) and send e-mails and photos of the adventures your buddy has. Almost like the class being overseas itself!

The uses for this type of project are limited only by your imagination. For us communication proved to be the hub of the ICT wheel which not only enriched our curriculum but also provided undoubted motivation for our pupils. We have found ideas that start off very simply have grown and grown. It is only our sense of practicality that has prevented this from becoming 'bigger than Ben Hur'. Using e-mails in the primary school classroom – put simply we love it!

Crossing continents – themed ideas

Leon Cych

Here are some ideas for a series of assemblies or other whole school activities over the period of a week. These could follow or form part of the visit of a 'Travel buddy', for example Paddington or MAPE's Owl and Panda, and are easily adaptable. So why not be brave and break the rigours of the NC for a week to come together as a whole school and try out some of these activities.

Assemblies

The five assemblies could follow the progress of two characters (Teacher one and Teacher two) travelling round the world, stopping in a different continent each day. The two characters will follow different routes, each visiting one country in each continent.

Children will be invited to guess where their next stops are going to be by interpreting clues such as

what clothes the characters are packing, what currency they are taking etc.

The 'locals' they meet need to bring one or two artefacts, pictures, pieces of music, etc. as clues for the children to guess their country. Some of these could be left on display on the stage for the rest of the day, under the name of the continent.

Allocate a continent to a class/year group/teacher. Those responsible for each continent should also add key facts to the poster display at the back of the hall on their continent's day.

Hopefully some children may be able to contribute to the assemblies. Class teachers should liaise with the relevant organisers if their children have something to contribute.

During the assemblies, the characters' routes so far will be marked on the large world map outline on the stage.

Journals

Make journals for KS2 classes to use (KS1 classes may also like to use these). Children should write an imaginary 'Around the world in 5 days' journal – they could follow the routes of the assembly characters, or plot their own, preferably following the sequence of travel. Completed journals should be handed in by end of the week; certificates can be given to all who complete a journal. You may choose to award prizes for best efforts in each class.

Competitions

During the week, have a set of competitions or quiz activities to support the assembly theme. These could include:

- wordsearches
- crosswords

You could also have computer workstation circling or carousel activities which could involve seven or eight different activities based on the continents visited.

Perhaps you could try:

- Large laminated jigsaws of the world map (mount on different coloured paper before laminating; it is then easy to sort pieces into sets at the end of the day.)
- Populations – order a set of countries by population – use search engine to find information. Older children could find other data about the countries, for example area, and then work out population density.
- Match the food to the continent/country (which continent do most of the foods come from?).
- Match the flag to the country; omit one and ask children to find the missing flag and print it out or draw it.
- If you can get it – a copy of the *World Feast Game*.
- Area – find out which country has the largest area by using non-standard units.

Displays

- Show a world map outline and time zones (with five clocks) on the stage.
- Display a large map as a background to be referred to every day using two colours – one for each teacher to mark the journeys as they travel to different countries.
- Display posters and facts about the countries and continents – travel agents and embassies are a good source for obtaining these.
- Have an 'events board' showing what is happening in each country. This might be as mundane (but very important) as the daily weather, or there may be other newsworthy events to record.
- Include in your display 'Hello' or 'Good morning' in different languages. This could also be used as

one of your competitions. Match the word to the country.

- Display photos of famous places which are shown and key facts asked about:
 - capital city
 - language
 - currency
 - key geographical features
 - flag

Practical activities using ICT

Project a world map onto a large backdrop with an OHP and have several older children trace the outline. Paint it and mark in the capital cities and major geographical features.

Role play

Set up a whiteboard or overhead projector.

One teacher acts as a newscaster for 'Where in the world!' S/he talks about the fact that two members of staff are going abroad – travelling around for the week with Paddington Bear (or A.N. Other-toy) as a roving reporter.

Cut to the individual teachers who talk about how excited they are and what they need to take with them (this needs to be hammed up). They list:

- passport
- foreign coinage
- method of transport
- different clothes they might wear for different climates

You could synchronise this with a *PowerPoint* presentation of the objects above in the context of photos of the countries they 'might' visit.

This also gives scope for pupils to write/act out their own scripts, and to have the 'programme' recorded and edited if you have the equipment.

Newscasters should 'meet' and interview or converse with someone who has a particular distinctive regional or cultural role. Try to involve parents and others to help with this.

If there are children from those countries, get them to come up and interact in an *ad hoc* play and reveal bits of information about themselves and everyday cultural artefacts from their country. Make the whole thing into a guessing game – which continent are we in today – Europe, Americas, Africa? Can we narrow it down to a country?

Play twenty questions to encourage pupils to formulate helpful questions. For example 'Is the country in the northern half of the continent?'

Both teachers report back every day – and each morning the newscaster goes over the route they have taken and elicits core information from the school assembly as a whole. . . . In this way you can cover eight different locations in the space of a week.

Early Years children might like to visit a local travel agent and then come back and model the

process of being a travel agent. There's lots of opportunity for role play, speaking and listening, and writing, with leading questions, such as:

- Where do you want to go?
- How do you want to travel?
- Have you got your passport?
- What clothes will you be taking?
- How long are you going for?

Children can develop their language skills using telephones, posters, pads of paper, maps, globes and desks.

Bon Voyage!

Resources

<http://www.plcmc.org/forkids/mow> for world maps. A free online computer jigsaw puzzlemaker – great for maps and flags: <http://www.tibo.cz/oc/> and <http://www.mape.org.uk/startower/world/index.htm>
 Currency exchange game: <http://www.clearlight.com/~vivi/hall/turn.html>
 Dorling Kindersley: *My First Amazing World Explorer CD*: http://www.gsp.cc/perl/product/product.pl?_STATUS=GET_PRODUCT_PAGE&PRODUCT_ID=162

Year 1 reports on *Lost Owls*

Harriet Martin

Cotton Primary School

My role as part-time ICT teacher is to introduce work one week with the class teacher present while the class teacher has the sometimes unenviable task of continuing the work without my presence in the second week. For the last year the acquisition of a data projector has greatly facilitated this process. It has been a tremendous aid in demonstrating programs and skills to children before they start work themselves. It also enables children to show their work to other children at the end of the lesson.

The most challenging sessions each week in the computer suite are the visitations of the Y1 classes. (Yes, we do also bring in Reception, but Y1 come for only 20 minutes and bring both a teacher and a TA with them!) They come full of enthusiasm. Their mouse skills grow week by week. Their levels of concentration are also growing, albeit sometimes imperceptibly. As they work in twos, they also need to co-operate and develop the social skills of sharing the mouse and decision making. These again for many children are learned skills, not innate talents.

The *Lost Owls* game included in the MAPE Owls Pack looked a good activity for these children. The timing was such that I wanted the classes to play the game in a week when I was not going to be present. Although I have Y6 helpers trained to come in and log onto all of the computers in preparation for the Y1 classes, I would not be there to tell them how to open the program. Accordingly, after copying the MAPE Owl Pack CD-ROM onto our server, I put shortcuts to the *Lost Owls* game onto the KS1 menus labeled 'Owls Game' – with a one-step click Y1 children can open programs. I also made copies of the maps showing the environments to be searched to help the children navigate in their quest for the lost owls.

Because there is a random element built into the game, owls are not found in the same place by all of

the children. Also, it is likely to go from day to night as they play the game, but when and where this happens will vary. The unpredictability of this helped keep the children's interest.

When I returned to school for my 'on week', I was delighted to hear that both classes had enjoyed playing the game and had done so with no difficulties.

The second week I wanted the children to write in *Clicker* about their owl hunt. A *Clicker* file came with the MAPE CD-ROM. It had useful grids to enable children to write about individual animals found during the game. I added a home page which could act as a contents page for the children. I linked the cells on it to the existing *Clicker* grids. I also renamed the folder which held the files, changing it to '!owls'. If a *Clicker* folder is named in this format, opening it automatically opens the home page.

I then copied the !owls folder into the collection of *Clicker* grid folders on our server. I have set up our computers so that children log on as user 'none' and then follow a link which gives them access to this main folder collection. This does mean that they must select their home drive and the appropriate folder to save their work, but with the youngest children it is sometimes adequate to print their work out immediately and not to save it.

To make life as easy as possible for Y1, I then made an shortcut on the KS1 menu straight to the *Clicker* !owls grids. Once again, they could open the program themselves in a one-step operation.

This was the second time Y1 had tried to use *Clicker* files. On the first occasion we had used a set of grids entitled !All About Me. That lesson had not been very successful. Children were meant to move through a long series of grids, each time choosing words to write about their hair colour, shoe size, etc. Only the most able Y1 children had succeeded in listening to the words and selecting the appropriate

choices with care. Most had enjoyed the session, but produced rather unintelligible jumbles of descriptive words!

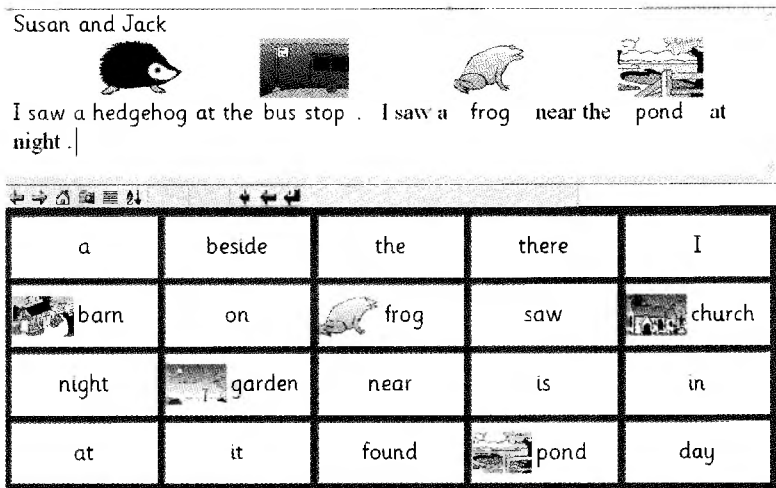
This time I introduced the grids very slowly, emphasizing the importance of listening to each word (with a right click) before inserting it in their writing (with a left click). Several children of different abilities were asked to come to the computer connected to the data projector and to try out the process. This repetition helped the class to internalise the skills needed while emphasizing the importance of working carefully.

The children were asked to name an animal they had seen in the game. When they clicked on that animal on the home page, a grid appeared suitable for them to write about their animal sighting. The grids also allowed the children to state whether they had seen their animal in the day or at night. The more able children were including these phrases by the end of the lesson.

The pairs of children wrote between three and eight sentences each. Because the children only needed the keyboard to write their names at the start and to add full stops, they were able to put them to the side most of the time and only one child succumbed to the temptation of hitting the keyboard aimlessly to produce meaningless letters. The fact that the program reads

the full sentence only when the full stop is added acted as a powerful incentive to add full stops! Although both the class teacher and I were present for this lesson, it went smoothly enough for the class teacher to have been able to manage it herself.

The modified *Lost Owls Clicker* files will soon appear on the MAPE website. I am, in the meantime, busy planning to create a set of *Clicker* grids to enable children to write about their exploration of 'Acorn Pond', an activity based on seasons on the CD-ROM *Sammy's Science House*. This is another science-based simulation beloved by Y1, but one which in previous years I had difficulty following up effectively with the children.



A weather station in your pocket! (well, almost)

Alan Rodgers

Independent Education Consultant
alanrodgers@cirrus.me.uk

With everything coming smaller these days it was only a matter of time before a weather station became more portable. It was not so long ago that to do any significant sensing and measuring required a great deal of kit and a heavy battery or a very long electrical lead. It was in 1994 that my school was given a new portable notebook computer and an interface box with some sensors. We had temperature, sound and light sensors. Out of a passion for collecting weather data a rotational sensor was bought from personal funds. Behind this purchase was the idea of climbing a large hill on a school field trip to the Derbyshire Dales carrying all this apparatus. We could then see how windy it was at the top compared to the base of the hill. Gosh, yes very

obvious, but we wanted to share with the pupils some very accurate data collection. The only trouble was the heavy backpacking that was needed; we did not do that again. Now we can, courtesy of the Kestrel 4000.

A few interesting facts

- I was very grateful to Richard Paul Russell Ltd. who kindly set my Kestrel 4000 to my holiday destination so that I could use it up and down hills in Wales. It also meant that I must have been one of the first UK users of the Kestrel 4000!
- See their web site at <http://www.r-p-r.co.uk>



- Data capture amounts to 250 readings, which is a lot of data! This data can be downloaded to a computer and saved into a CSV format for a spreadsheet program via a PC Interface (£74 + VAT).
- The device is rather expensive at £254 + VAT, but it is a lot cheaper and easier than carrying around a Notebook computer plus interface and sensors.
- The Kestrel 4000 is a mere 102 g.
- The only important thing it does not measure is the rain; still, you can't have everything.

Fig. 1. Taking a temperature reading. The store rate of the data log can be set to anywhere between 2 seconds and 12 hours. It continues to take readings even when the device is switched off. It is a bit like having a 'Black Box' in your pocket.



Fig. 2. The Kestrel 4000 has its own carrying bag. The protector for the impeller on the anemometer is open in this picture. The device is clearly very portable.



Fig. 3. It really does fit in your pocket!

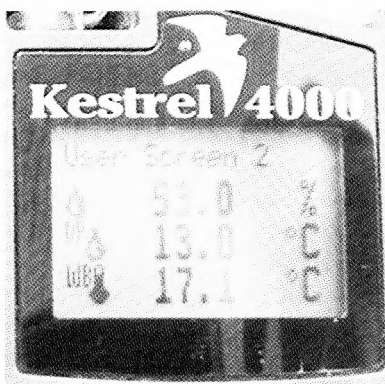


Fig. 4. There are three screens for each measurement. Firstly you can see the current reading in clear numbers. Secondly you can see details of the humidity and minimum and maximum temperature readings in the memory. The third screen shows a chart of the temperature data. On the data chart a cursor can be scrolled across to give the individual readouts for each data value. Up to 250 measurements can be charted.

Who's Who in MAPE 2003

<i>Chair</i>	Heather Govier, 219 Oswald, Courtwood Lane, Croydon CR0 9HG tel: 020 8657 0423 email hgovier@btopenworld.com
<i>Vice Chair</i>	Betty Lumley, 28 Westbury Road, Northwood, Middlesex HA6 3BX tel: 019238 23411 email betty.lumley@talk21.com
<i>Treasurer</i>	Keith Whiting, 149 Sherbourne Avenue, Nuneaton, Warwickshire CV10 9NJ tel: 024 76396 132 email keith@whitingk.freemove.co.uk
<i>Secretary, MAPE Membership and MAPE Sales</i>	Val Siviter, Cilgeraint Farm, St Anns, Near Bethesda, Gwynedd LL57 4AX tel: 01248 602655 email Val@bethesda.demon.co.uk
<i>Editor – MAPE Publications</i>	Rhona Dick, 121 Fitz Roy Avenue, Harborne, Birmingham B17 8RG tel: 0121 686 9747 email rhona.dick@blueyonder.co.uk
<i>Business Manager</i>	Roger Keeling, Newman College, Genners Lane, Bartley Green, Birmingham B32 3NT tel: 0121 476 1181 fax: 0121 476 1196 email R.Keeling@newman.ac.uk

MAPE Working Groups

Publications Group

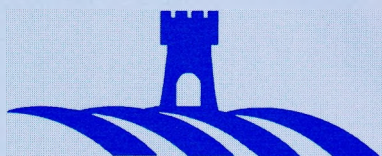
Yvette Blake	Heather Govier	Dafydd Price	Margaret Still
Leon Cych	Rob Humphries	Alan Rodgers	MaryLou Thornbury
Rhona Dick	Harriet Martin	Janice Staines	Roy Topping
Bob Fox	Moira Monteith	Angella Streluk	Barry Wake
Rosemary Gledhill	Andy Pierson		

Projects and Innovations Group

Mick Harwood	Pat McLean	Alan Rodgers	Angella Streluk
Roger Keeling	John Raybould	Dave Siviter	Nick Tumber

MAPE

6



Published by Castlefield (Publishers) Ltd, Castlefield House,
Main Road, Hackleton, Northamptonshire, NN7 2AD

NEWMAN COLLEGE with MAPE