MICRO-SCOPE IO

Newman College with MAPE

Contents

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MICRO-SCOPE 10

Editorial

One healthy aspect of accelerating activity with microcomputers in primary schools is a proliferation of new journals. Since our last issue we have received MEP regional bulletins, MAPE local newsletters and reports from several *ad hoc* groups. Of course, this trend also raises questions of duplication of effort, of rationalisation and of tree conservation.

One issue we take up gladly appears in Peter Stephens' report (p. 19) of a discussion group on the future of MAPE and *MICRO-SCOPE*. It is quite proper for members to ask, as we often do, how the journal could become more effective, more responsive to events. One suggestion in the report deserves further discussion – that of raising funds from advertising to employ staff and pay contributors. For the moment, our own view is that there is a need still for *MICRO-SCOPE*'s 'home-made' approach – a sharing of ideas and problems by full-time teachers involved in development. Such a perspective also includes the needs of newcomers and of teachers with other priorities than micros.

MICRO-SCOPE's effectiveness depends on the quality and variety of contributions. We need new ideas, and we need feedback. Peter Stephens is willing to take another step. He has agreed to act as a sounding-board and adviser for *MICRO-SCOPE* in his region, directing ideas, articles and criticisms from MAPE members back to us. We invite other MAPE regions to follow suit.

Our next enterprise will need massive support from members but the pay-off could be rewarding. As Reg Eyre points out (p. 29) there are more microcomputers in homes than in schools. Do teachers welcome this? What effect will it have? Would teachers like to offer advice to parents and draw them into partnership on educational aims? This is the idea behind a projected *MICRO-SCOPE Special* which could be made available to parents and children through schools. Ideas on the enterprise and its contents soon, please. A likely date for distribution is May 1984. Feedback too, please, on the first *MICRO-SCOPE Specials* – the 'MAPE Tape', and, at last, our joint venture with BLUG on LOGO.

Articles by Senga Whiteman (p. 32) and Roger Keeling (p. 31) ask again pertinent questions about the availability of in-service training to support the massive extension of hardware. We would welcome reports from the regions on this subject. There may be another side to this story, too – are there grievances from teachers who find secondment for other curriculum areas, already squeezed, blocked because of the pressure here? And where are the new teacher leaders coming from? Is it a reasonable guess that many are being diverted from specialisation in mathematics? (This has already happened at secondary level – see the *TES*, 21 October, p. 1). Many LEA maths advisers have taken computing on board too.) If so, what is the cost to primary maths, post-Cockroft?

Our repeated emphasis on balance in the curriculum is reflected in major articles on aspects of language development – 'My talking computer' (p. 2) and 'EDWORD' (p. 6).

* * *

We wish to thank John Fair, author of those early BASIC articles, who has been on our Editorial Board since we started. He moves out now to concentrate on other work, and we welcome Senga Whiteman in his place.

Deadline for articles for *MICRO-SCOPE 11* – 10 January 1984.

* * *

A note from Senga Whiteman:

MAPE Conference 13–15 April 1984
The Conference is at the planning stage. What would you like to see and hear about? It's your Conference! Please let me know soon – contact me at Newman College.

My talking computer

C. W. Bailey
Dept. of Child Development and Educational Psychology, University of London

As microcomputers go into primary schools we often hear teachers of infants saying that they have not seen much software that is suitable for the lower end of the age range. Print on screens is not much use to the non-reader, or beginning reader; but once a voice is available, then quite a variety of possibilities arise.

Computers have had voices for some time. Texas Instruments provide a range of talking educational aids such as *Speak and Spell* (now with an English voice), *Speak and Maths, Touch and Tell*, and are about to market a talking book, which uses a bar-code reader to 'read' bars under printed words in order for the microprocessor to speak them. IBM have a system called 'writing to read' running in a number of United States elementary schools, where disc-based speech is used to produce instructions, words and phonemes in order to practise a large number of common words in a structured programme of reading materials.

Another approach is to synchronise a tape recorder with a computer program. A most versatile system for the BBC machine by Format Peripherals uses a stereo tape system linked to a concept keyboard. This allows teachers to write educational material and overlay their own speech with no need for specific programming skills.

If a word is spoken into a microphone it is possible to represent this in analogue form as a smooth wave on an oscilloscope. To store this on a microchip, it has to be digitised. If every conceivable point on the screen were stored then reproduction would be extremely good. However, it would be expensive in terms of computer memory and very few words could be stored. Consequently a compromise has to be reached – a trade-off between quality and quantity.

The BBC computer has a speech chip, with a vocabulary of over 150 words, using the voice of Kenneth Kendall. But this vocabulary set is not specifically designed for educational use with young children.

Microprocessors which depend upon vocabularies stored in ROM chips tend to produce rather stilted sentences, and since the population at large is used to high-quality speech coming from cassette tape recorders and record players, this often irritates. Someone once said it is easier to conquer the space between stars than the space between words. ROM chips can be word perfect, yet the music of human speech, the timing and intonation, is lost in sentence synthesis. Until massive amounts of computer memory can be incorporated, this problem will remain. However, given this limitation, acceptable educational ends can be achieved.

I want to devote the rest of this article to describing a new product which is soon to be marketed by a British firm called 'Electroplay'. It is called MY TALKING COMPUTER, and is aimed at the 3 to 7 age group.

It has a vocabulary of over a hundred words on ROM and the quality of these words is high. Most, if not all, of the computer voices produced in this way have been male. This one has a female voice.

The toy market ranges from the cheap and trashy to high-quality products such as Fisher Price. This one is at the Fisher Price end of the continuum. It is robust and tastefully designed, with some very ingenious solutions to what seemed formidable design problems. In fact, I am not sure it is a toy; maybe it will be 'the child's first computer'! But what does it do?

Most of the functions it performs are overtly educational, and it has been developed so as to be compatible with what teachers would be wanting children in this age range to learn, whilst at the same time having play value.

There are no LEDs or LCDs, or any other computer display. The visuals are in the form of a spiral-bound booklet whose pages can be revealed separately in a 6″x 4″ window. The window traps the page firmly over a screen, which is in fact a touch-sensitive keypad of 42 cells. The left-hand set of 2 rows of 6 are used as control cells. The rest of the screen, i.e. 30 cells, is available for games.

The simplest game is a picture matching game. When this overlay is selected, and the word 'ON' is pressed, the voice says 'Hallo' and a second or so later says 'Now press go'.

The cell labelled 'GO' is then pressed and the game is activated. After this point the child can press any of the 12 pictured objects: e.g. a clock, a bird, a car, a house, a dog, etc., and the voice names the objects: 'dog', 'fish' and so on. There is no time limit. The child can go on pressing pictures which 'say themselves' as long as he wishes.

If the blue triangle labelled 'game' is pressed, then the computer names objects and the child has to find them and press them. However, they have to be found before the next word is said, and this 'time window' decreases on subsequent games. A score is announced after 17 goes, and is computed from the number correct and the time window operating on that game. So it is not a score that is 'out of' something, but a relative score which can be beaten or not on subsequent games.

An identical game exists on another page, except that now we have only the *names* of the objects printed in coloured diamonds in comparable positions.

The complete non-reader can now press words which say themselves, and can go on doing so for as long as it interests him. He can ask for a game again by pressing the blue triangle, and will be asked to press words after the computer calls them out.

Two other overlays are called 'talking pictures', and work in a similar way. Press 'ON', press 'GO' and then press any part of the picture and the voice identifies it: 'Yes, that is the tree.'

There are 5 words in squares along the bottom or down the side of the picture. If these are pressed the voice says, for example: 'That's the *word* tree'. Children very quickly learn to distinguish the word from its referent.

Again, if the blue triangle (which contains a question mark) is pressed, the computer invites the child to find objects or words.

This time there is no time limit; for example 'Find the word house'. If the child presses the *drawing* of the house in the picture, the voice says 'No, that's the house, find the *word* house.' Once again there are no limits, the child can press anything. The computer will tell him what he has pressed and go on asking him the question until he finds the object or word asked for. In this way pure trial and error learning could go on.

However, after 5 words or pictures have been asked for, the child is given a score out of five.

Three other overlays are called 'Talking Story'. In 2 of them, the 'story' is a 12-word sentence in 2 lines under a picture. The third is five 6-word sentences under each other with the nouns overlaying illustrations.

Again, once the game is activated, the child is free to press and find out. If he presses in the order of reading, i.e. left to right, top row to bottom row, the story makes sense and relates to the pictures. If he chooses to do otherwise, he realises he is making nonsense and can get a lot of creative fun out of it!

The triangle again turns it into a find-what-the-computer-askes-you game, with no time limits, infinite patience and a score out of five.

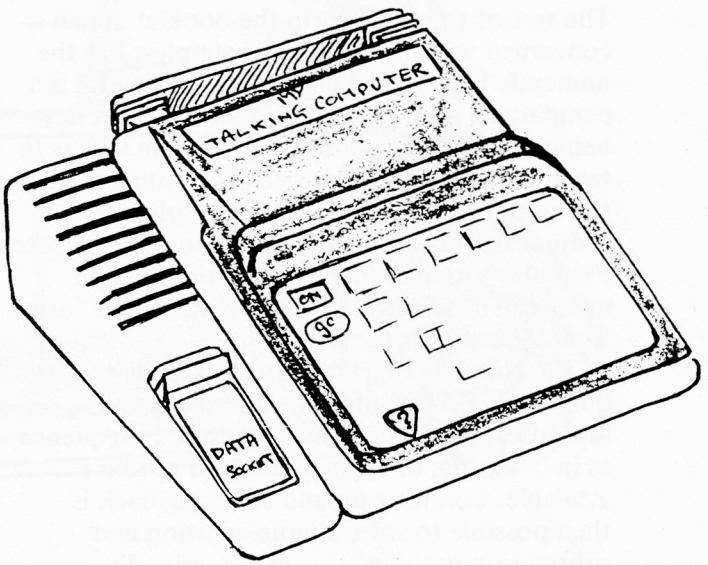
It is easy in reading materials to illustrate nouns in order to give children clues, but a picture of a yacht could be 'a boat' or 'a ship'. Here there is no such ambiguity. The yacht is definitely a yacht, because it says so when you press it, and so do the letters y-a-c-h-t. Much more difficult for children are the frequently occurring little words which cannot be easily illustrated, e.g. 'is', 'our', 'by', 'on', 'that', 'go', 'the', 'a', 'and', 'find', 'past', 'I', 'see', a set which all appear and say themselves in the talking story.

The final literacy-related overlay is called 'sentence maker'. Here, 30 words are randomly arranged on a 6 x 5 matrix of cells. The nouns are all on yellow cells, the verbs on red, the others on orange cells. After 'ON' and 'GO', the child can press words to hear what they say. If he wants to, he can make up sentences which make sense, or he can make any nonsense sentences he likes. He can make his sentence as long as he wishes by using the word 'and'.

Again the blue triangle turns it into a game of word recognition. There is no time limit, and a game consists of being asked to identify 5 words. Correction happens by the voice reading the incorrectly pressed word and then repeating the question.

If you forget what the question was in any of these games, or you did not quite catch it because someone distracted you, pressing the question mark causes a repeat.

No one would claim that this is *the* way to teach reading, but word recognition is part of the reading process and if a child can acquire a sight vocabulary of over 30 common words by playing with this device, who will be complaining? But do children actually learn to recognise



these words by playing in this way? No systematic evaluation on any significant scale has yet taken place, since the product has only just been developed.

However, an anecdote may be appropriate. My daughter is just 4 years old. She has not yet started school and is a non-reader. Three weeks ago she would not have been able to recognise any of the words on the overlays. I had let my children, Mark and Susan, play with the machine (having to prise it from one to let the other have a go!). They flitted from one page to the next and did not seem to stick with any one long enough to learn much. I was preparing some overhead projector transparencies of the overlays to use at a talk I was giving at the MAPE conference, when Susan came up.

I put the talking picture overlay in front of her and said: 'Can you find the word tree?' She identified the correct square; 'OK, now find the word house.' She did. 'That's right, now press the word car.' The overlay has both 'cat' and 'car' on it. She chose correctly. I then asked her to find the word 'flower' and finally the word 'cat'. She got them all right with little or no hesitation. My first thought was that she had simply remembered their relative positions on the page, rather than identifying features of the print.

I then chose another transparency, with 12 words on, in larger print on coloured diamonds. She found the words 'house', 'flower', 'tree', 'car' and 'cat' almost as easily on this. Frankly I was surprised, considering how little time she had spent on it. She really beams when the voice says 'You're right!' (Mark is convinced there is a very clever lady inside the machine who knows more than Daddy!) Now Susan is picking out words like 'on', 'and', and 'the' in the story books we read her.

Number games

The rest of the overlays in the booklet are all concerned with numbers. The simplest has the numerals 1 to 10 and next to each numeral is a comparable number of fish, the whole overlay being a colourful aquarium scene. The idea is to teach the distinction between the numeral and the number of items it represents, plus the ordinal aspects of 10 fish being more than 9, etc. Free play mode is entered first, or question mode can be selected. Questions are of the form: 'Find 5' or 'Press the 5 fish'.

The Number Juggler overlay extends to 20 numerals. This should help with numeral identification. These can be pressed in sequence as in counting, or again a question option is available. Counting on and counting back is then possible to solve simple addition and subtraction problems, as on a number line.

A talking blackboard overlay gives practice in the 4 rules, with answers available if you want to give in!

A more sophisticated and open-ended overlay is 'the talking calculator'. This is a fully functioning calculator which will handle anything up to about 32,000. 529–600 will give a negative number.

Children can learn to 'read' large numbers by entering the digits and then pressing the '=' sign; e.g. 5 'five', 4 'four, 3 'three', 2 'two' '=' and the computer says 'five thousand four hundred and thirty two'.

Somehow the human voice makes 532 x 13 = 6,916 seem like lightning calculation more impressively than the ordinary calculator with its silent LCD display!

Chain calculations are possible up to the numerical limit. Division is handled with remainders rather than decimals because of the age range aimed at. The remainder can be dropped by using the 'cancel' key and a chain calculation can then continue.

Another overlay is just a fun game on speed of number identification, and would keep an adult on his toes. Other overlays have the multiplication tables on them, but they do not test. The child presses and the computer says for example 7 x 6 = 42.

Telling the time

The *piéce de résistance* – the most difficult facility to incorporate, but the problems have been solved in a very elegant manner – is the talking clock.

Teaching children to tell the time, a pure dial-reading skill, is something all infant teachers face. This device should really help. It is made of sturdy plastic and is hinged so as to replace the booklet in the display window, yet remains hidden while the book is in use.

The hands of the clock are both freely moveable yet, unlike the cheap cardboard clocks in school, are semi-geared, so that pointing the little hand to 3 and the big hand to 8 to make twenty to three cannot happen, provided the hands have clicked into the appropriate detents. Compromise is involved because of the limited number of cells on the screen. For all times up to the half hour, the little hand points to the hour. After the half hour the detents change position and then, for all times up to the hour, the little hand can only be positioned *between* the hour numerals.

In the free play mode, the child can set the hands to whatever positions he likes (in 5 minute intervals on the minute hand) and then, when he presses the hands, the computer tells him the time he has created. There is again a

question mode, but there is no time limit and no score. The child can select one of 4 levels.

Level one teaches the minute hand and hour hand, and setting the clock to the hours. Level 2 handles quarter past, half past and quarter to. Level 3 handles any analogue time (with the 5 minute interval proviso) and level 4 does this in digital form.

If the child has made the clock say twenty to four in analogue mode, he presses the hands and is told the time. He can then change to level 4, press the same hand positions and is now told the digital form: 'Good, that's three forty'.

If the child answers a question incorrectly he is told the time he has actually made and asked the question again. If he still gets it wrong, the computer tells him where to position the minute hand and then the hour hand, then tells him the time he has made and repeats the sequence until the time is finally correct.

Again there is more to teaching children about the meaning of time and duration than this can handle, but a child can be safely tutored on his own and have fun too.

There is infinite patience, and a much larger number of questions and answers can be handled in 10 minutes here than from work sheets with clock faces to draw hands on. The feedback is instant and correction immediate.

The price of all this? This little machine is to retail at £49.95. This works out at around £2.00 per program. But even this is only part of the story. There is a very neat expansion capability labelled 'data socket'. More software is in the pipeline on the alphabet, spelling, music, etc. The plug-in cartridges are capable of totally new vocabulary, even a different voice, and new games routines.

A new booklet of overlays and the accompanying cartridge is designed to sell at around £12.00, so with this expansion potential you can almost have 2 for the price of one, and it opens up a whole range of new interactions for early learning.

It is aimed at the home market, but should find a place in infant classrooms. Put one in the Wendy House and see what happens!

EDWORD

Peter Weston
MEP Wales (Wrexham, Clwyd)

This EDucational WORD processor has been developed in Clwyd as part of a curriculum development project partly funded by MEP (Wales). EDWORD is a multi-media package in which the software is held on a single 16K ROM chip. It will run on any BBC microcomputer system using disc, tape or a network. EDWORD will operate with any printer that works with the BBC microcomputer. This is achieved by providing an interactive program (on disc or tape) that will automatically create a file of information about the printer to be used. This printer configuration file can be read by EDWORD and *need only be created once*. One printer is automatically assumed to be available if the content of the printer configuration file is not read.

Development Strategy

There is a variety of text editing/word processing packages available for a wide range of microcomputers. These packages generally require the use of computer-oriented features such as control characters, i.e. holding down the key marked 'CTRL' whilst pressing another key. Such packages vary in price but are almost invariably outside the price range of most schools. However, they have found a place in some schools. Whilst one applauds the introduction of word processing into the curriculum, I would suggest that using these packages involves pupils' having to adapt to the package rather than having a package designed for the pupils. In developing EDWORD our approach has been to design a word processing package to meet the needs, and match the abilities, of pupils at school.

We looked at word processing packages on microcomputers and also at commercial word processing systems. The latter are designed with the user in mind, but are outside the financial resources of schools and LEAs. We believe that EDWORD provides comprehensive word processing capability combined with ease and consistency of use at a price that 'education' can afford.

EDWORD has been designed and shaped by educationalists with considerable experience both of teaching secretarial skills and of computer-based curriculum development. The following features are some of those considered desirable for educational users of word processing systems.

Ease of use
No special shift or control characters, single key depressions for commonly used functions.

User friendly
Helpful, easily understood error messages.

Easy to remember commands
Mnemonic commands.

Screen-based
The screen always displays an exact copy of what would be produced on the printer.

Suitable display width
80 columns are essential for 'reality' and to facilitate integrated use within existing curricula.

Safety-net facilities
Requesting confirmation before removing a document from the memory of the microcomputer.

Comprehensive range of features
Features commonly available on 'commercial' systems should ideally be available to the education user.

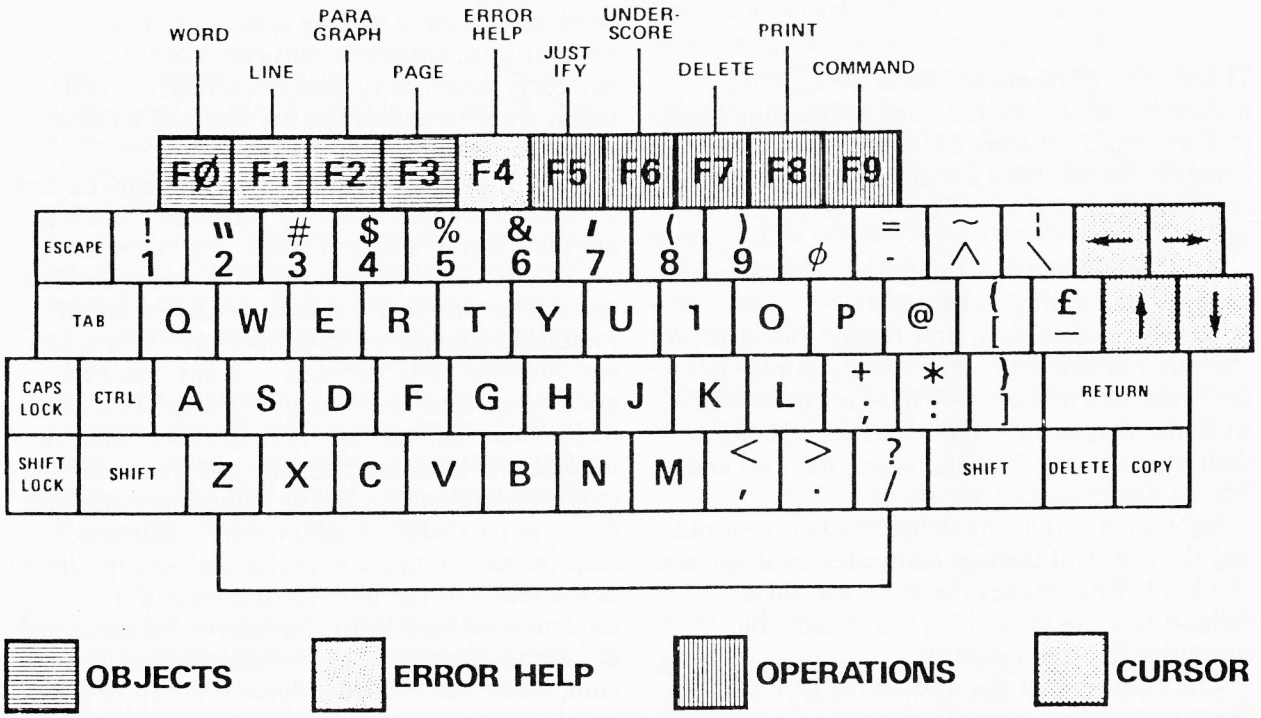
We have borne in mind the following considerations in relation to pupil use of a word processor.

1. Pupils must gain sufficient confidence and understanding to facilitate the handling of other systems they may experience beyond the school environment.
2. Pupils must be able to adapt from any previous keyboard experience: i.e., the package must not contravene what they have already learnt.
3. The facilities provided must relate to the range of abilities of pupils who will use the package.
4. It ought to be possible for a pupil to work independently within the learning situation.
5. The time available for 'hands-on' experience is likely to be limited until schools acquire more microcomputers.

The development of EDWORD has been monitored by a group of teachers drawn from all the LEAs in Wales. Trials will take place throughout Wales and involve primary schools, secondary schools and FE colleges. This will involve the use of software and also of resource material which is seen as an essential part of the total package. Interest and approval from those who

EDWORD
EDucational WORD processor system

KEYBOARD LAYOUT



have seen the package for the first time has been simply staggering. The development of EDWORD has shown that 'working from the classroom to the computer – with the teacher as designer' is unquestionably the right strategy for curriculum development in computer-based applications.

EDWORD Package

The EDWORD package is sold essentially as a number of 'packs'.

User pack 16K ROM chip
Flip book (self instructional)
User manual
Keyboard insert
Price: £38.95

Teacher Pack Teaching guidelines
Set of OHPs
Set of wallcharts (A3 card)
Set of information sheets on word processing
Specimen document
Program to set up printer configuration file
Specimen files for popular printers
Price: £21.95 (disc)
£18.95 (tape)

Secondary schools and colleges will require at least one teacher pack. Thus a special pack, known as a Starter Pack, will be available. The Starter Pack will comprise one User Pack and one Teacher Pack.

Starter Pack User Pack + Teacher Pack (disc) £59.95
User Pack + Teacher Pack (tape) £56.95

The prices quoted are for a single purchase. However, quantity discounts are available.

Class sets of information sheets and a video cassette for in-service training will also be available (prices available on request). Details should have been sent to every secondary school and college within the UK. A guide for primary teachers, with ideas for using word processors in the classroom, is in preparation.

Order forms may be obtained from:

Clwyd Technics,
Dept. EWP/E,
Microprocessor Centre,
Coach House,
Kelsterton Road,
Flint, Clwyd, CH6 5TH.

The joy of mismatch

T. C. O'Brien
Teachers' Centre Project, Southern Illinois University, Edwardsville

There's one thing about which we all agree. Kids, especially little kids, are wonderful. Think of that little two-year-old. What a wondrous being he/she is! 'How I wish I had their energy,' say mothers and dads. 'Wish we were their age again.'

And there's another thing upon which most people agree. Computer freaks!

Worse, teenage computer freaks. Dreadful! At computer arcades, they mindlessly plunge in their quarters without a 'What-ho' to the world. At home they grunt 'Hallo' and disappear into their micro world for what seems days on end. What a dreadful state we are in!

My hunch is that the delightful two-year-old and the dreadful teenage computer freak are one of a kind. What makes the two-year-old so delightful is the same thing that makes the computer freak so dreadful.

The point is that the underlying glue that keeps us together is equilibrium.

Readers are certainly familiar with instances of physical equilibria – the balance that inner-ear fluids enable and the tendency toward life-preserving metabolic changes when one climbs a mountain, for example – but they may not have considered equilibrium as important in a non-physical context, in the context of people's perceptions and ideas and general head-picture of the world.

By equilibrium is meant the tendency to preserve one's self and at the same time to extend one's self. What we all do is to seek equilibrium and to invent disequilibrium, especially in the realm of experience and ideas. (Think, for example, of the career of a chess player from first fumbling play to expert. Think of a person learning to ride a bicycle. Think of *your* career or hobby.)

A general term for that which causes disequilibrium is dissonance. Dissonance is the mismatch between where we are and where we want/need to be (or where a situation calls for us to be). The best observation of dissonance – though observations are everywhere – came some years ago when I watched a bunch of teenagers learn to toboggan. Six of them there were, and at first they tenderly, gingerly, edged one person over the lip of a hill. Within half an hour, they were laughing and hollering and flying down the hill six on the sled. And by evening's end they were heading downhill, six of them, standing backwards on the toboggan, daring a nearby tree to come close to them.

Some aspects of dissonance – all of them at work in our every waking hour – are risk, competition, challenge, surprise, novelty, mystery, incongruity, and uncertainty. (You might want to add to the list yourself.) These things are the spice of life.

Back to where we started. A two-year-old and a teenager are patently very different from one another. But in a deeper sense – in the sense of underlying tendencies – they are very much the same. The two-year-old is at an early stage of establishing equilibrium with respect to his/her surroundings. The two-year-old, intrigued by everything, into everything, is a whirlwind of dissonance. The teenager, though more mature in logic and language than the two-year-old, embraces dissonance just as fully. The computer freak, in particular, seeks novelty, challenge, surprise, and competition (often self-competition) as the result of the built-in (hard-wired?) tendency we have both to preserve ourselves and to extend ourselves. In a deep sense, the teenage computer freak is the two-year old writ large (as we all are, in fact).

There are several major points to be learned from these teenage computer jocks, I think. One is that children (and people in general) are often immensely more able than we think. Second, they are often self-taught. Third, they are often self-sustaining in their growth, a point often overlooked by parents and teachers who see themselves as the only source of knowledge.

But perhaps the most important lesson to be learned is the power of dissonance in the life and growth of children, an issue with which American education is wholly unacquainted. As the educational software industry moves out of its baby shoes, we educators have the opportunity to capitalise on dissonance – quest, challenge, surprise, uncertainty, self-competition, risk, incongruity, complexity, curiosity, the tendency to move past one's present state to be the best one can be – as elements intrinsic to the learning situation.

This is precisely the stuff that has been overlooked in the past sixty years of behaviorist, minimalist, and efficiency-dominated American education. We should learn from the computer freaks and the two-year-olds. The tendency to engage and resolve mismatch – and to create mismatch just for the joy of resolving it – is built into us all. As educators, we might be wise to see children as wearing signboards saying 'under construction' or, better, 'under construction, self-employed.'

Schools Project Report

Helen Smith

The Newman College Schools Project, announced in *MICRO-SCOPE* 5 and 6, has completed its schedule. Its Co-ordinator, Helen Smith, has selected from a mass of diary material, transcripts and discussions to produce a wide-ranging and balanced report. It contains a summary of each school's characteristic experiences, a review of classroom organisation, detailed analysis of software, views of teachers and children, and many pertinent observations and conclusions. We all have much to learn from such detailed evidence. Here are some extracts. The full report will be available soon – details to be announced.

Today, as DoI micros go out into schools, thousands more teachers are facing the same challenge. How will they respond? To what extent will teaching methods be influenced? Will schools cope with organisational and technical problems? How will children benefit?

Although we cannot provide the final answers, we can show the direction in which schools are moving after eighteen months. Our report and its conclusions are, in some respects, incomplete, and will quickly become out of date. This is inevitable against a background of rapidly-changing technology that will have continuing impact on education.

It is impossible to make a final judgement, since many important developments are about to take place. Our schools will get into full swing next year with two, three or even four micros, thus greatly increasing the time available to children. They will find a greater range of high-quality software. Next year, our teachers will be able to use the Edinburgh floor turtle with the 480Z: the BBC Buggy will soon be available. Elsewhere, hand-held microwriters are already being used by children in schools. Video disc technology is well advanced, and holds great implications for the future.

Most primary teachers, starting out from scratch with their DoI machines, will share, over the next year or so, the experiences described in this report. Rather than looking too far into the near future, teachers will be concerned with the practical challenge presented by this new resource. A bewildering variety of software must be examined. Teachers must find out what each program does, and decide whether it is likely to benefit their children. If so, they must plan how to use it most effectively in class. Classroom development is a key area, and a number of successful cases will be described.

We hope that this report will point the way to future good practice. It is vital for the micro's contribution to education that teachers should be prepared to use the new tool in a flexible and imaginative way, with sound awareness of the scope that it offers. Our accounts of teachers' attitudes and experiences will be of value in assessing the extent of support and training necessary to reach this desirable objective. The desirability of this goal is perhaps most powerfully illustrated by the remarkable comments of the children themselves.

* * *

What children have to say

A report on computing in primary schools would not be complete without the points of view of the children themselves. We tend to neglect, when planning our children's education, what they themselves have to say about what goes on in our classrooms. Yet, if children find what we ask them to do boring and pointless, how on earth can we claim that they benefit? How many times we have failed to exploit to the full those opportunities which, as children themselves could tell us, are graced with joy in learning.

This section is compiled from comments made to me by children from all six schools as the project drew to a close. Some of their comments are highly revealing: some may be interpreted in different ways. Some statements are worth considering very carefully, and comparing with our own points of view. Some reflect on wider aspects of classroom practice. The children's pragmatic attitude towards the machine emerges, as does their catholic taste in software. One point is made over and over again: that children prefer programs that offer freedom, challenge, and a chance to control. Is our own choice of software always guided by these principles?

'Sometimes they're too easy . . . like *Gridref,* 'cos the teachers say you have to do so and so level, but it's often not hard enough. They should give you something you have to think about. If it's too easy for you, the teachers sometimes don't listen. It's all right to start with Level 1. But you've got to drift into your own level.'

'*Farmer* makes you think. We solved it after a long line of dog eating chicken, chicken eating grain. But that's it. If you know it, it gets boring.'

'The adventure's more interesting than the other programs. You've got to make your mind up. If you know the combination it gets boring. The fun is when you try another way. When you use a book you just turn one page then another. It's better when you've got to choose.

I like LOGO 2. You can make music with it. You don't have so much freedom on the 480Z as you do on the BBC [Matthew is comparing another well-known BASIC simulation of LOGO with Computer Concepts' LOGO 2]. You can choose 0 to 5. 0 is black and white, 1 and 2 are colours and so are 3 and 5. They come in different sizes. We've just done music, we haven't done the shapes yet. You have to define some music. You have to give it a name. You have to type BEEP, space then it's always 15, comma, whatever number – that's the pitch. After the last number you choose how long it's going to last. You can do that nine times but on the tenth you must do end. It's best to show you on the computer actually . . .'

* * *

Software: future policy

Throughout the project, Newman College has been able to fulfil most of the schools' software requirements, through the provision of resources developed both in college and within other projects supported by the MEP. No charge has been made to the schools for any of this material. Although standards of design and educational worth vary, each school has accumulated a range of about eighty programs.

It seems unlikely that many educational institutions or authorities will be able to distribute free software on this scale in the future. Primary software design has now passed the experimental stage, and is no longer the province of enthusiastic amateurs. The development of primary computing materials is becoming a serious commercial concern. Sources of free software are bound to diminish as a result.

Some teachers may have already formed poor impressions of 'commercial' software. In attempts to exploit growing enthusiasm for computing in schools, certain software houses have rushed out so-called 'educational' software of highly suspect design and content. Moves by major publishers into the primary computing market, however, may be welcomed. Reputable publishing houses expect the highest standards of robustness, graphic design and educational viability. Users of their material will benefit from professionally printed and packaged support material. National distribution will be highly efficient, and information on products readily obtainable.

We must set against these advantages the fact that schools must now be prepared to pay for computer materials. This may not seem unreasonable to most people. It is accepted that it is the responsibility of schools to purchase books, film strips, wall charts and other commercially-produced resources. Money is available through capitation and LEA subsidies for the purpose. However, funding is not keeping up with the cost of resource materials, which, due to increased sophistication and improvements in design and presentation, is rising sharply. Schools are coming under increasing pressure to ration their spending. Even the replacement of worn-out materials is becoming a problem. At least one school has had to rely on the goodwill of parents in making up the balance necessary to purchase a new reading scheme.

Nevertheless, there will doubtless be a growing demand for published software as more schools acquire micros. At college, we find ourselves dealing daily with enquiries from schools who are clearly prepared to spend some money on material. Teachers soon find a need to build on the *Micro Primer* packs, and any software which the LEA has been able to provide. Many heads are prepared to make money available when it becomes apparent that a wider range of software is necessary for development throughout the full range of ages and subjects. At the same time, material on offer will come under the closest scrutiny before purchases are made. Does it really offer value for money, compared to books and other resources? There will no doubt be pressure on publishing houses, not only to maintain high quality but to keep their prices as low as possible.

One disturbing aspect of the current situation is the temptation to indulge in illegal copying of programs. There are times when few of us can honestly resist the appeal of getting something

for nothing. This happens to be, after all, one aspect of human nature. Piracy is rife on the home computer front: it has been estimated in *Acorn User* that, of any fifty owners of Acornsoft's popular game *Snapper*, only one has legally bought a copy.

Some of us may be tempted to make illegal copies of educational programs for reasons quite other than those of selfish gain. We may feel that we are saving colleagues money. If we cannot buy programs owing to lack of funds, then our children will be deprived. Teachers genuinely may be unaware of the risks one runs in duplicating copyright material, and may not have thought of the shocking example to set to children – not that I wish to moralise upon the issue. What is of concern here is the impact that piracy, if it becomes a widespread practice, will have upon the future of primary software development.

To many people, £9 or £10, or even more, may seem an excessive amount to pay for a program on a C15 cassette. Those who hold this view are probably unaware of the cost of development, which is due mainly to the amount of time needed to write the material. A substantial learning package, including tapes and support material, may well be the product of a whole year's work by a small team of people. Considerable investment may have been made, well in advance of the first trickle of revenue. Some people may feel that the publishing houses are guaranteed giant profits in the end; we have all heard stories of teenage programmers who have made millions from the home computer market. The narrower educational market, however, is far less profitable. Some publishers may expect to make very little, if any, gain from their endeavours in this field. If returns were to fall short of expectations prices would rise, with disadvantageous consequences. Eventually, educational computer materials would be priced right out of the market. Publishers would pull out, and professional software development would cease.

Efforts are being made to keep the cost of educational software as low as possible. A number of commercial packages have been developed under MEP sponsorship. In the case of some materials, rights have been purchased by the MEP, which has also borne the cost of a significant amount of software development. These programs form the basis of the *Micro Primer* packages. Others may be distributed free of charge by local authorities. Some authorities plan to negotiate terms with software houses for bulk purchase software, to be distributed at low cost to local schools. Local authority subsidy appears to be an excellent means of ensuring a wide scale of distribution at little expense to individual schools, thus benefitting future software development.

Not one of the six schools appears to have drawn up a shortlist of material for possible purchase next year, although at least one school has definite plans to purchase *Mary Rose*. Emphasis is likely to be on making the best use of material already available. The arrival of the *Micro Primer* packs has meant that there is a lot of new software to explore after the summer holiday. It appears that, where money is available in the near future, it will be used to purchase hardware rather than software. It is worth noting that the schools are already considerably better endowed than most: they have at least two micros apiece, and some have printers and disc drives. However, the priority remains to give children more computer time.

This is how future developments are foreseen at Rounds Green:

> The aim of the school is, as far as finances allow, gradually to increase the hardware available, so that children may get more computer time. If resources are being directed into the purchase of hardware, it is unlikely that there will be finance available to buy software. Software is likely to come from three sources:
> 1. written and developed by teachers;
> 2. swapping with teachers from other schools;
> 3. support services, i.e. LEAs and colleges.

Hollyhedge, on the other hand, already have four machines, and feel that attention may be turned next year to the purchase of software. Details have not yet been worked out, but the available range will have to be looked at very carefully. According to the head, programs bought must not duplicate those already in school. They should ideally make use of printer facilities, and yield a hard copy of the work done. Most importantly, they must be related to the curriculum of the school. The head would like to purchase up to thirty or forty programs over a period, but does not feel prepared to spend more than ten pounds on any individual item.

We feel that most schools will soon discover, as our project schools have done, that one machine is insufficient. Printers and disc drives will also prove attractive propositions. Our own schools have found that printing facilities have opened up new possibilities (particularly with *PQUERY*, *BUILD* and LOGO), and that BBC disc drives have been well worth the expense. On this basis, it therefore seems that schools will seek to obtain additional hardware before spending substantial sums on software. The commercial market may thus be rather slow to warm up. If certain first-class software is to be widely used, we must look to local authorities to negotiate for the rights to distribute the best commercial material.

* * *

Conclusion

Staff in our six schools feel that the Newman College project has been a great success. With our support, a sound start has been made. In each case, the micro is now fully accepted and established as part of the school routine. The original six machines have stood up to eighteen months' heavy use extremely well. Constantly in employment, there is no danger of relegation to the stock cupboard!

We have seen that most teachers feel strongly that they do not get enough computer time. The majority of schools throughout the country will, for a year or two at least, only have one machine. In a school of, say, ten classes, each teacher may expect to be timetabled to use the micro for maybe one half-day a week. From the start, providing continuity between sessions is going to be extremely difficult. We have mentioned that it is important to create opportunities for work away from the computer. Teachers will need to be fully aware of the possibilities, yet this requires a wide knowledge of available software and some experience of using it in class.

A single micro is sufficient for a period, to allow staff to gain familiarity. Some teachers will wish to move on quickly to using the machine for a range of activities throughout the week, and will press for more computer time. Those who attend in-service training will probably see LOGO and *Mary Rose*, and will be keen to try them out.

These programs may be used by single groups using the machine once a week, as one of our teachers found out with his Friday afternoon LOGO project. In fact, the whole class may be able to use *Mary Rose* in this situation, as the discussion and record-keeping generated by the program takes place away from the computer. However, careful organisation is necessary, and most teachers will prefer to approach the program with a group at a time.

Where micro use is confined to one group, other children feel left out, and parents begin to murmur. If the inclinations of our teachers are generally shared, most primary staff will prefer their children to use the computer on a democratic basis. However, we have seen that, where time is limited, teachers prefer to use skills programs from which children may gain quick benefits. They will find substantial projects with simulations difficult to get off the ground.

Head teachers will therefore need to consider purchasing second, and third, machines, if they wish to develop computing in their schools beyond the familiarisation stage. There is, of course, no DoI subsidy for additional systems, which will mean paying twice the original price. Certain local authorities plan to assist schools in purchasing a second machine, but in many areas it will be up to the schools themselves to find the money. A BBC system with colour monitor costs in the region of £700: a jumble sale may raise over £50 and a summer fair a couple of hundred, if the weather is fine. Many head teachers are wary of putting on too many fund-raising events, as the goodwill of parents may be threatened, and a point may be reached where staff become unwilling to give up yet more free time.

If no further financial support becomes available in the long term, it is likely that regional differences in provision will emerge. At least one school in the Thames Valley, where many parents work in the computer industry, has machines donated by parents. No such offers have been made to our project schools. However, despite the difficulties, one school has now bought a system. All are pledged to the acquisition of more hardware, even if money must be accumulated over a period.

A variety of approaches to organisation has been adopted by the schools. These tend to depend, in each case, on factors such as the lay-out of the building, and staffing numbers. At a distinct advantage are schools built on one level, as machines on trolleys may easily be moved to any part of the building. Other schools have made arrangements to suit their own particular conditions, and it is impossible to generalise, overall, on an ideal form of organisation.

The most crucial decision has been whether or not to store the micro in a fixed base. Where this has been done, there are advantages: everybody knows where everything is, and the chosen area can be built up as a computer resources room. However, there are disadvantages, as two schools found out. Their reasons for reverting to class-room use highlight the problems caused by lack of supervision, and reduced involvement of staff. One school, however, has had no choice but to adopt a fixed base, owing to its sheer size. The computer room is efficiently run, and micro use

is supported by a tightly-structured curriculum. We notice here, though, that it is impossible to extend involvement to all the staff. Teachers have at least seen the programs which the children do, and are able to judge the children's readiness by the stage they have reached in the scheme of work. At other schools, however, one may imagine that teachers will send children to computers with little idea of the activities that the pupils will undertake, or of the problems that they may face. We may conclude that it is best to use the micro in class, with the full involvement of the class teacher.

It is of interest to see what teachers have made of the available software. Earlier, I expressed my surprise that over half the teachers had made extensive use of fewer than six programs. Some may feel, however, that this is a far from disappointing record. We may all be able to think of occasions where a new resource has been less well received in school. We should have been delighted if, after eighteen months, we had found that nearly half the staff were using it as fully as possible in the time available. Unfortunately this does not often turn out to be the case. Perhaps the computer has established itself remarkably well; it was always reasonable to expect that some teachers would need time to become fully confident in using it.

We must take into account, of course, the fact that teachers may simply not have had enough time to use all the programs such as *Trains* and *Gridref*, which were available at the start of the project, while newer programs have been overlooked. It takes time, of course, to look at a batch of new programs. The most effective approach appears to be for someone to make a point of looking closely at the new material, and telling colleagues about programs that may be useful to them.

Teachers need to become aware not only of what software is available, but also how to make the best use of it in class. There is a pressing need at this stage for extensive classroom development: now that we have the programs, how may we best introduce them, and build round them? We have seen that the most productive software is often that which lends itself to further development of important ideas. While many teachers cling to skills programs, others in our project schools have developed a range of activities to support more ambitious material. Such teachers should, with the full support of head teachers and advisers, have the chance to spread their ideas, by giving talks to colleagues, and by throwing open their classrooms. Unfortunately, the majority of primary teachers work in relative isolation. We rarely have opportunities to visit other schools during the day, or to watch colleagues teach. Many staff have commented to me that a visit to see successful teachers at work with children would provide a source of encouragement, inspiration and new ideas.

We have seen that, in our project schools, it is strongly felt that the computer should be integrated into the curriculum, and should be used in its support. This decision has been rightly made, and will ensure constructive and co-ordinated use of the micro throughout all year groups. It is to be hoped, of course, that the curriculum will prove flexible enough to accommodate the unique range of learning opportunities which the micro may offer. Teachers ask for programs on angles and scale, for example, because they are considered to be important aspects of the curriculum. They may have overlooked programs such as *DIAGRAMH*, for example, which provides enrichment in both concepts and the bonus of creative challenge.

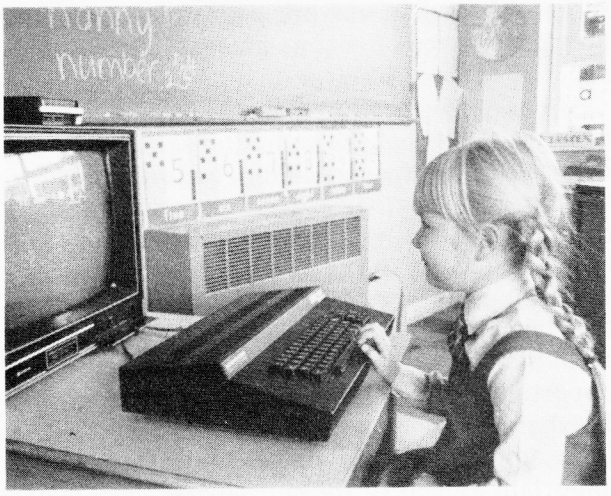
Where programs form an integral aspect of the curriculum, it is important to ensure that all children cover each new stage as it arises. However, there is a danger that we may impose a rigid routine, that will fail to bring out the best in our children. Mansoor's comment is significant: he resents being confined to prescribed work, giving him little to think about, when he would rather 'drift' to his own level.

Children clearly relish a challenge which demands their full range of thinking skills. They know when they are actively learning, and when they are not learning. Their revelations about what helps them learn, and what does not, may surprise us. Nicola, for example feels that practising the same things over and over again may actually cause her to forget them! Children will strive to reach distant horizons and will continually surprise us by what they can do.

What are we to make of the reaction to the 'Adventure' game? Some teachers, wary of the encroachment of the Space Invaders cult, will have doubts about using a commercial game in class. Yet this activity, as we have seen, provided opportunities for the following vital aspects of language development:

purposeful, dynamic reading;
accurate spelling;
original thought;
reasoning from past experience;
vocabulary extension;
discussion and decision-making.

There are implications here for future software development. Most of the programs in our repertoire provide reinforcement and extension in connection with isolated skills. In cases of learning difficulty, this approach may be invaluable. But no package of skills programs can provide the breadth of experience gained by the children who played the 'Adventure' game. Will future programs offer freedom, challenge



and a new world to explore, or will they continue to break down the learning process further into specific skills?

Our project is now complete, and yet there is much that should be carefully recorded and appraised over the coming year. It will be important to see how teachers make use of computer time, now that it has been at least doubled. Readers will have noticed that we have made little reference to simulation programs: our schools have not yet acquired items such as *Mary Rose*, *Saqqara* and *Adventure Island*, but some have plans for next year. An important new simulation, developed at Newman College, will be available for distribution in 1984. This program, for 480Z only, deals with the life of an urban fox. Children, playing the part of the fox, must find food and water and cope with hazards. It may be felt that our evaluation of micros in primary schools is somewhat incomplete, without a chance to have seen these programs used in class.

Nevertheless, a great deal of important ground has been covered in our schools since the first machines arrived amidst the Christmas festivities of 1981. There is currently a feeling among staff that, far from being over, the project has reached a significant new stage. The long-awaited second and third machines, and new software, are now at teachers' disposal. We expect that important developments will take place next year, now that teachers may take advantage of a greater share of computer time. Other schools will envy their position, no doubt. We hope that this report, in pointing the way to good practice, will help teachers elsewhere in establishing computing in their own schools. With such solid foundations, they too will soon find themselves at the critical point, where imagination may take off to fly into the future which, for microelectronics in education, holds excitement, challenge and promise.

The MEP Primary Project

Anita Straker
NPP, King Alfred's College, Winchester

Readers of *MICRO-SCOPE* will be very aware that the introduction of microtechnology into primary education poses many problems for teachers in schools, for their trainers and for their advisers. Among the more obvious of these problems are lack of guidance about the possible applications in primary schools of a new and unfamiliar technology and lack of a clearly defined rationale for its use. Software, too, causes problems. It is difficult to find out information about programs and hard to see them before purchasing; and when they arrive in school they may be quite unsuitable for use with young children. Above all else, primary teachers are desperately anxious to attend courses which will help them but the courses that exist are heavily oversubscribed.

The MEP National Primary Project (NPP for short) has been set up to try and resolve some of these issues. The project's team has now been appointed. It consists of myself (formerly an Adviser in Wiltshire and now the overall director of the project) and two project officers, Christopher Schenk, formerly headteacher of a first school in Oxfordshire and Philip Fisher, formerly deputy headteacher of a middle school in Hampshire. The team has an administrative assistant, Linda Witherow, and a clerical assistant, Catherine McKeown. We are based at King Alfred's College, Winchester.

Over the next two years, the NPP team aims to plan and present short residential courses for those who have the responsibility for the in-service and initial training of primary teachers. These 'trainers' are likely to include LEA primary advisory staff, university and college lecturers concerned with primary education and selected teacher leaders from primary schools. We would anticipate that at present many of those who attend our courses will have little background experience of the new technology.

Although this is the first national project of this nature, many LEAs have already undertaken their own initiatives at the primary level. Since our courses will start by reflecting the best of current practice, one of our first tasks will be to find out more about exciting developments in

primary schools. We also need to know what primary teacher trainers themselves see as their own needs.

Some of the areas we hope to cover are:

1. Computer-based learning, including evaluation of software, and the variety of ways it might be used in the primary classroom;
2. Ways in which primary children can make use of the computer's power in accessing, processing and storing information.
3. Word processing at a level appropriate for young children;
4. Devices which can be controlled by a microprocessor such as turtles, model cranes, and programmable toys;
5. Ways in which children can use microtechnology to investigate and solve problems;
6. How children can be made aware of some applications of the new technology in the adult world.

We hope that people attending our courses will feel they have gained sufficient knowledge and understanding to sponsor, co-ordinate or assist on similar courses. To help with this task, the team aims to produce resources for teacher trainers to use on their own courses, together with some materials for teachers to use in their own classrooms.

If you have any exciting developments in your own area, why don't you write and tell us about them? Is some new software being developed which encourages children to use a range of problem-solving skills? Has anyone built a small device which children are controlling from their computer? Has a class of infants been able to contribute jointly to a long piece of story telling by making use of a simple word-processor? We would be delighted to hear about it. Better still, write an article for *MICRO-SCOPE* so that we all get to know!

Microelectronics in the primary school

Graham Bickerton
Headteacher, Alsager CP School, Stoke on Trent

It would be all too easy to seek to gain publicity by exploiting the fact that we have been running an electronics course in our primary school for the past three years. How impressive it would be to write in glowing terms about children of nine who are reading circuit diagrams and then constructing circuits involving resistors, diodes, LEDs, integrated circuits, etc. Suppose they use the computer to control traffic lights and mini-robots? What would be even more impressive would be to say that they seem to understand what the individual components are doing, what is happening in the circuit and most important of all, enjoying it.

The work in school obviously comes from my own personal interest in electronics. This grew out of a desire to rectify my own inadequate secondary education some thirty years ago. This left me totally confused and uncomfortable in the area of electricity. Yes, it was part of the syllabus, but the time allocated to it and the way it was taught left me unable to grasp the basic concepts. I talk to many people today who have had a similar experience – 'We did it at school but I never understood it then and don't now.' I hope that things are different for our children today.

Few would doubt that we are in an exciting, rapidly-changing technological world. If it is considered part of our brief in education to help children understand their present world and to prepare them for the future, then we cannot avoid this new technology. My children in school are aged between 5 and 11 years old and are, therefore, at the most distant point educationally from entering the world beyond school. This means that I need to look deeper into the crystal ball when trying to provide them with skills, knowledge, concepts and attitudes that they will require for life in 10 to 15 years time.

'But electronics contains concepts that are too difficult for primary school children.' Most certainly, if they are introduced and taught in the way that I was taught thirty years ago. However, consider for a moment. When I was at school, algebra was only for the grammar school child, statistics for A level Maths and set theory and logic the province of the university. As I enter my infant classrooms today I see very young children doing elementary statistics, sets and logic and coping with algebraic equations like 3 + ? = 7. We have found that the minds of very young children can accommodate concepts hitherto considered too advanced, if consideration is given to the mode of presentation and the materials used. My experience of the past three years suggests that children of nine have little difficulty with the fundamental concepts in electronics providing they are introduced to them in a sensible way.

What is the sensible way? By using the child's fascination with technology and its desire to find out 'why?'

I believe that we should be providing children with experiences and helping their minds form a 'model' that allows them to think about electronic components and what happens in a circuit. For this they will need some teacher input of knowledge, but most of all they will need to be asked thought-provoking questions that will deepen their understanding. At the end of the day I want children to be excited by electronics and use their acquired knowledge in a creative way to implement their own ideas. Whilst I am aware that there is a wider need for children to analyse the new technology they see around them, I would like a child to have enough knowledge to enable it to implement its own idea – 'I want to make it do . . .' Educationally this is a long way from joining wire 5–11, 6–21, 7–14 and then standing back to see what happens.

As I tentatively explore the possibility of microelectronics with young children I see the application in other, more traditional areas of the primary curriculum. As children explore the outputs of a TTL 7490 chip and use the output port of their computer to switch on traffic lights, binary arithmetic suddenly has a purpose. If that appears too far out, working out resistor codes will deepen an understanding of place value and reading the scale of a multimeter is a practical application in primary maths.

Perhaps it is in the area of remedial education that electronics might make a most significant impact. I see intelligent 10-year-old children who for one reason or another have had a struggle with the early stages of reading and writing. Much of their future work attempts to build on this shaky foundation. Electronics can offer them a fresh start. The work is practical, and whilst it makes demands upon their thinking skills, it does not involve reading and writing. The number of children that I find 'turned on' by this new language of electronics continues to surprise me. It is too early to suggest that there is a transfer to improved reading and writing skills, but a new-found confidence in their own ability must help personal growth.

The major problem as I see it is not whether we ought to introduce microelectronics to primary children, but how? There is a parallel to be drawn with the introduction of computers into primary schools. Very quickly it was realised that there was a desperate need to retrain teachers to accept and accommodate this new technology. Without a knowledge of the opportunity that a computer presented, and the limitations it imposed, teachers were in no position to exploit the enormous educational potential of computers. Unfortunately, in some people's eyes the equation is seen as micro-electronics = computers. Consequently the educational opportunities presented by electronics have yet to be explored. But one day . . .

To me the teacher remains the most important educative resource that the school possesses. If we are to gain the maximum educational advantage from the new technology then in-service training of teachers is urgently required. I hope that I have said enough to indicate that exciting possibilities for electronics exist at primary level.

I applaud the vision of the Merseyside and Cheshire MEP Co-ordinator for ECT, Roy Joynson, who has launched a course specifically for primary teachers entitled 'Getting started in electronics'. It could well be that the primary sector will be the most fruitful in the long term. Primary school teachers tend to be creative and innovative in their approach. The schools do not suffer the exam pressures of the secondary schools and the 'lead-in' time for new courses is less.

But what will be the effect of this upon the secondary school curriculum? At the moment it is safe to assume that children entering secondary school will have virtually no knowledge of electronics and courses can be constructed accordingly. What a problem it will be when some children arrive who already design circuits and are into ICs and computer-controlled robots.

The speed of change is the most impressive aspect of the new technology. This might tempt one to think, 'We'll opt out until it settles down and we can see where it's going and decide whether we want to go there'. However, the world will not wait for us. If we are to serve the future needs of our children, we as teachers need to accept the challenge that change presents and the primary school is as good a starting point as any other. If nothing else, it will make us aware of this rate of change and sensitive to the problems that it is likely to cause to society in general.

Make no mistake about it. The new technology is threatening. It threatens us to change our schools at a rate to match the technological advances. I suggest that a major problem for education in the 80s may be the need to keep our school organisation and planning sufficiently flexible to respond to rapid changes in the outside world.

My vision is obviously limited by my own inadequate knowledge, and I have made no attempt to define what I mean by this 'new technology'. I have not tried to make a differentiation between microelectronics and electronics. However, I have seen into an exciting new world and I wish to share it with primary school children. I believe that this is both possible and desirable.

MAPE matters

Ron Jones
Chairman of MAPE

IFIP Conference

Do you remember that hot summer when summer madness reigned and even micros were turned off? I was fortunate to be able to spend part of it in Northern Germany at the International Federation of Information Processing conference which was held in the beautiful lake resort of Malenta. There were six of us from the UK and MAPE was well represented, having both its Chairman and Deputy Chairman amongst the six. Several other countries were represented at this working conference which, fortunately for us, used the English language for the whole proceedings – this caused the Japanese delegates a few problems which they successfully overcame through the liberal use of graphics.

The delegates from the other countries were very surprised by the fact that the UK delegates all knew each other, a fact that I had not even contemplated before – such is the network which now exists throughout England on the use of microcomputers at the primary school level. It is the building of this infrastructure and the sharing of experiences which is allowing us to move so rapidly from the 'base camp' which we have now established. The UK papers presented at Malenta and the discussions that resulted served to illustrate the UK's growing expertise in the use of the new technology: this is fast becoming the envy of many other countries, even the USA where the use of the micro seems firmly embedded in drill and practice.

MAPE meetings

MAPE, through encouraging activities at area and regional levels, must continue to build upon this infrastructure; I am delighted to be able to report that at least six regions are extremely active in this respect. I am looking forward to attending MAPE's Scottish Conference at half term and speaking at the first Annual Regional Conference to be organised in the Northern Region. Such conferences will certainly help to relieve the pressures on the 1984 National Conference which will be held at Newman College, Birmingham from 13 to 15 April 1984, just at the start of the Easter break. We have moved the venue in an attempt to reduce the price to members so as to attract classroom teachers, because we reckon that is where the ideas lie and where MAPE's work has most to offer.

Note the date: MAPE members will all receive details and application forms – early days but places are soon snapped up. We are determined, in order to keep the conference as intimate and as friendly as in past years, to put a ceiling on the numbers attending. We could, of course, hire hotels around the area but we feel that to maintain the spirit of the conference it is preferable to have all delegates accommodated within the same campus. More details at a later date – the uses of the technology are expanding at such a rate that it would be foolish to firm up arrangements too soon.

School 2000

Another highlight of that hot summer, as far as I was concerned, was to be invited to Wigmore Street and to enter the impressive portals of IBM and help judge the 'School AD 2000' Competition on behalf of MAPE. It was indeed a privilege to share in the ideas so beautifully and thoughtfully presented by the children. The children really did show remarkable perception in the way they presented their ideas of the future. There were, however, some very disurbing predictions evident in entries from many different parts of the country; ideas on corporal punishment meted out by impersonal robots of every conceivable type! The entries from rural schools revealed some very pessimistic views of life in city schools in the year 2000, with detailed descriptions of personal protective devices, even to specially designed uniforms. But the winning entries were far more optimistic, showing how technology might help to create a very exciting and challenging learning environment in the future. There was evidence in the entries of some very good teaching. I also found it quite admirable that a multinational organisation the size of IBM should take the trouble to set such a national competition and that the chairman and vice-chairman of the company should actually take a personal interest in it to the extent that they each chaired a judging panel. It is this sort of co-operation which will help all of us in education cross safely the technological divide and bring closer together the roles of school and the real world.

BLUG

Our 'Base Camp' is now providing succour to many more primary teachers who have only recently received their micros under the Government's 'Micros in Schools Scheme'. It is also

providing the lines of communication and supplies to groups of teachers who have long since left base and have set up their own settlements out on the frontiers. Such a group is BLUG – yes, another acronym to get your tongue round. It stands for a very active and rapidly growing band of teachers organised under the banner 'British LOGO Users Group'. I had the privilege of being able to attend their inaugural conference held at Loughborough University at the beginning of this term. Their president, Seymour Papert, opened the conference and stayed for the whole proceedings. The enthusiasm for LOGO is indeed infectious. It certainly fills a serious gap in the use of micros – that of problem solving. It is very encouraging to have the author of *Mindstorms* explain and expand his philosophy which fits so well the philosophy of so many primary schools in this country. There were many varied versions of LOGO on display and the buggies and turtles vied with each other. The program *Dart*, developed by the MEP Chiltern Region, came out of the weekend as a strong contender for any teacher wishing to introduce LOGO to children using the BBC micro. The disappointing news from BBC was that their own LOGO would probably not be ready before Christmas – perhaps it may even be launched at the MAPE Conference! This delay was causing dismay amongst primary teachers, especially when the American machines and the RML 480Zs were ablaze with their versions of LOGO.

Book Shelf

The summer allowed me to dip into a few books which I think you would find interesting and informative. The first one is a new publication from CET (3 Devonshire Street, London, W1N 2BA) in their working paper series. This one is number 22 and is called *Interactive Video: Implications for Education and Training* by John Duke. It offers a tantalising glimpse into the world of tomorrow. The book is the first contribution to an important discussion and it is hoped that primary schools will be represented in this discussion because interactive video has so many implications for the future.

Another book which I have found very informative is *Computers and Education*, the World Year Book of Education Series published by Kogan Page. (Also reviewed on p. 25 – *Ed.*) It is edited by a distinguished panel comprising Jacquetta Megarry, David Walker of GAPE fame, Stanley Nisbett and Professor Eric Hoyle of Bristol University. It covers so many issues which include: thinking, learning and educating; computers in action; national Case Studies from France, UK, South Africa, Canada and New Zealand; and computers and the curriculum. It is certainly a useful reference book for the Teachers' Centres and local libraries, but at £15.95 might not appear on too many teachers' bookshelves in spite of its thought-provoking and often stimulating contents.

On the other hand a very readable and again thought-provoking book, *Teaching Humanities in the Microelectronics Age* by Anthony Adams and Esmor Jones, published by OUP, just might find itself on a teacher's personal bookshelf, not only because of its relevance to the primary classroom but because it fills a very important gap. Often the computer is closely allied to mathematics and science: the authors show quite clearly the relevance of microelectronics to the humanities. Their chapter on future perspectives would certainly prove invaluable for would-be prospectors leaving MAPE's Base Camp; it would at least offer them some guidance as to which direction they might like to take, but it does not pretend to offer them a detailed map. It will, however, encourage them through its pace and optimism to become trail blazers.

Trail blazers often require sustenance and this could be provided by the Open University's 'Micros in Schools Projects' which have now been published. They build on the foundations laid down by *Micro Primer*, and give teachers a wide choice. MAPE members who are interested in following very carefully structured courses, to help them find their way through the complexities of the new technology and eventually emerge as leaders in the field, should write to the Project Manager, Micros in Schools Project, The Open University, Milton Keynes, MK7 6AA. The OU Information Booklet *Micros in Schools, Friend or Foe* is a very useful source of information on this series of self-study packs. *MICRO-SCOPE* would be delighted to receive comments from any members on this series once they are on the way.

Yet another source of help is available – this one from the ITMA group who have recently published, through Longmans, two modules in their series *Micros in the Primary Classroom. The Classroom, the Micro, and You* and *The Curriculum and the Micro* are the first two modules of five in the series. Again we would welcome comments from teachers as they begin to use modules in the series.

Broadcasts

The TV and radio are good sources of help not only for teachers but, of course, also for children. The programmes for the BBC Computer Literacy Project are being repeated – the

Computer Programme Part I in the Autumn (BBC1 12.35 Sundays from 9 October for 10 weeks, and BBC2 12.05 Fridays from 23 September 1983). Notes to accompany the series are available for £1.30 from Broadcasting Support Services, PO Box 7, London W3 6XJ. Radio 4 VHF on Thursdays at 2.20 is broadcasting a series on 'Using your Computer' for 9 to 12 year olds in February 1984. 'Computer Network' is being broadcast as a magazine for enthusiasts. On BBC2, starting in January 1984, a series of five programmes on IT called 'The Electronic Office' will be transmitted. That same month the repeat of the five programmes 'Micros in the Classroom' will be on BBC2 and during the Spring Term 'Junior Electronics' for 9 to 12 year olds will be broadcast on Tuesdays on Radio 4. January will also see the transmission of 'Making the Most of the Micro', the second series in the BBC Computer Literacy Project. The media are certainly doing their best to help us keep open lines of communication to ensure that the technology reaches our classrooms.

Before I close VIEW for this edition of MAPE matters, I have not forgotten my promise made in *MICRO-SCOPE* 9 of a progress report on the use of the BBC Buggy. Exciting work is emerging, but it warrants far more than mere mention in this column. I am trying to persuade the teachers and the children using the beast to share their experiences with you, perhaps in *MICRO-SCOPE* 11.

However, I would like to make a plea to you through this column – we shall soon be entering a period when the Government will be looking seriously at the use of micros in primary schools – please make your views felt through this national magazine. Let us know of your future needs as concerns hardware and software provisions. Would you find a use for a disc drive? Would a printer be viable? Would a good database program be valuable? Could you make use of a Buggy-type controlled vehicle? Would a full version of LOGO be a boon to your use of the new technology with children in your classroom? Please let me know c/o *MICRO-SCOPE* – write that letter now!

MAPE taking shape

Peter Stephens

This report is taken from a collection of papers arising from a MAPE regional conference (Merseyside and Cheshire). It reflects on many issues of importance, some of which we have taken up in our Editorial. Our thanks to Dave Evans, who compiled the collection.

There were a number of issues I had planned to discuss, such as:

- why should we be using computers in primary schools?
- should children be taught to program?
- is CAL worthwhile?
- simulations vs. drill and practice?

In the end we only discussed *one* issue – what is MAPE and what *should* it be? I hope those people who took part in the discussion will recognise this as a reasonable account of that discussion despite this personalised presentation.

Those of us who joined MAPE in the first year received a copy of three booklets; 'Five of the Best' and 'Microcomputers in Primary Schools' both by Ron Jones, and 'Managing the Microcomputer in the Classroom' by David Ellingham. In addition there were three issues of the magazine *MICRO-SCOPE*, promises of a software library – and utopia! What now?

The three booklets were issued with MEP money, and the software library looks further away now than ever. All that remains apparently is *MICRO-SCOPE*. Can this really be value for money at £7.50 a year? Where does the money go?

Those questions are being asked increasingly by both current and prospective members. So what should MAPE try to offer?

1. MICRO-SCOPE

This has so far been a fairly low key affair. MAPE members deserve a *thicker* and *better quality* magazine, one which can rival *Educational Computing*. That means more features, a greater variety of contributions, software reviews, advice, letters, advertising revenue, and inevitably a full-time editorial staff.

But how do you start? One of the reasons why people prefer to submit contributions to *Educational Computing* rather than *MICRO-SCOPE* is, perhaps, that the former pays good money (£50 a page) while the latter cannot. Should *MICRO-SCOPE* consider offering payment to contributors in order to start things off?

That would, perhaps, attract better or more contributions and make *MICRO-SCOPE* attractive to non-members of MAPE as well as the paid-up faithful who get it free. This is essentially an editorial decision, or at least a decision to be taken by MAPE's national executive.

But there is a path for all conscientious MAPE members to take which would start off the process of improving the magazine: the regional conference at LIHE on 19 February proves that there is the talent on Merseyside to run a popular well-received conference covering a large number of the applications of microelectronics in primary schools. This talent should be used to *bombard* the editor of *MICRO-SCOPE* with articles, short or long, letters, requests for help, queries, program listings, subroutines, advice on technical questions and advice on classroom organisation. (Perhaps there should be more written about classroom organisation, and less about technical questions?)

2. Local Activities

The Regional Conference was such a success (and enjoyable for group leaders as well) that perhaps we ought to do more to get our members together, to discuss, to learn. MAPE members vary enormously in their degree of expertise and in the aspects of microelectronics that interest them. Perhaps we ought to consider running different sorts of conferences/in-service days – some for beginners, some for 'experts' or specialists, some for people who want to explore a new (for them) aspect of microelectronics in more detail (e.g. databases, control devices, program construction or electronics). Is this something you would like to see MAPE trying to do? If so make your voice heard – write to your Regional Chairman of MAPE and tell him exactly what is needed in your particular area.

3. Organisation

One of the things MAPE can do most easily, and is already doing effectively in some areas, is to act as a pressure group. Local Authorities vary enormously in the importance they attach to the use of computers in primary schools. Those that lag behind might sometimes be shamed into improving their provision by being made aware of what other Authorities, particularly neighbouring ones, are doing.

The sort of things that forward-looking Authorities are doing are:

(1) Setting up a computer centre for all teachers to use.
(2) Mounting a variety of courses at frequent intervals and at different times of the day.
(3) Appointing Advisory Teachers to help schools introduce computers.
(4) Setting up a software library by purchasing licences to use the best programs available.
(5) Commissioning software, possibly by seconding practising teachers to write it.
(6) Financing a regular, informative newsletter edited by teachers.

Few LEAs will measure up to all of these criteria, at the moment, but we ought nevertheless to demand only the very best from our respective Authorities despite the financial situation. So far almost every development that has taken place in primary schools' computer use in the Merseyside and Cheshire area has been due to the efforts of individual teachers – and often at their own expense. The time has come for LEAs to match those efforts and that expense.

If you envisage a different role for MAPE, if you disagree with any of the views expressed here, or if you think we omitted anything important in our discussion, please write to Jim Fawcett, 15 Berbice Road, Liverpool, L18 OHU. He will be happy to raise your views either in the Regional Committee or the National Committee – or you could send a contribution to *MICRO-SCOPE*!

Getting on

Charles Bake
Woodside Primary School, Croydon

It seems that whenever I engage in conversation with a parent nowadays the topic soon turns to computers. Now I don't find that particularly strange: after all I am in charge of our micros. But when I think back to the early days of 1982 I begin to realise what a staggering transformation has taken place in parental awareness of the new technology, not only in Croydon but in the country as a whole.

In February 1982 we received our first microcomputer. I had never seen one before and neither had the parents. Indeed eyebrows had been raised when the head suggested that PTA funds be set aside in order to purchase a micro. A member of the Committee was most put out and asked me, 'Why waste hundreds of pounds on a computer? Nobody will know how to use it . . . it'll be just a five minute wonder!'

By the May of that year the micro was in regular use in school and we organised an evening so that parents could come along to see the computer, ask questions about its use and have a go for themselves. The response was such that we had to arrange two sessions so that all the parents could come along. Those that did were rather frightened of the machine, 'Oh! if I touch it I'll break it . . . Isn't it all very complicated?' Then there were the computer buffs who delighted in asking awkward questions about tubes, buses and handshakes – all way above my head at the time, so I just smiled and agreed that London Transport was wonderful.

When the Summer Term Open Evening arrived there was even more interest, though now it was laced with scepticism and doubts: 'Will the children still be taught their tables now there's a computer in school? . . . Isn't looking at the screen bad for their eyes? . . . They don't just sit and play Space Invaders, do they?'

By the start of the following school year there were one or two children who either already had a micro or had been promised one for Christmas: 'Mum says we need to learn how to use a computer for when we grow up!'

And now, the pressure is really on. Parents are now asking me to recommend what micro they should buy for their sons and daughters – 'Well, Mrs Jones bought one for Freddy so we thought Samantha should have one too.' Not only are the children eager for places in my Computer Clubs, but parents are also anxious that their child be allowed to join. Only tonight I was visited by one mum who told me of the tears in her daughter's eyes when she found out she had not been chosen to attend the Micro Club. Is this a genuine plea or is it that micros are now the current status symbol, the measure of academic success and 'getting on'?

At a meeting only last night one mum told me how she intended to demand an answer from a secondary school as to why her daughter was not being given regular access to a micro. Then she asked if I was thinking of running classes after school for children in a similar situation, and might parents attend too? . . .!

I won't be at all surprised when one day in the not too distant future a parent asks if her pre-school infant ought to start learning how to byte its rusks, BOOT! its booties or say 'HIMEM' instead of 'Hi mum'!

LOGO — inspiration for children or for teachers?

Di Wailing
Gonville Primary School,
London Borough of Croydon

The thought of coming face to face with a computer can be a little intimidating when all previous contact has been via an impersonal bank statement or the non-negotiable starkness of a phone bill.

Suddenly in schools many a 'maths person' has been confronted with a typewriter box and blank screen and expected by pupils and colleagues alike to work wonders – instantly. Also, and perhaps more importantly, she has been asked to provide a nice package that can be wheeled along, plugged in, and will keep countless groups of mixed ability children fully absorbed for the regulation hour or afternoon.

This is all well and good while the store of elementary, simply-followed, neat beginning–middle–end programs holds out, and while such software has novelty value. Soon it becomes all too routine, like the weekly PE or the regulation set of science lessons. Many programs, it is true, do not lend themselves to extension work. After all, the acid test of a good program is that the machine does it better and more efficiently than the teacher. Many children will always continue to be delighted by pictures on a moving screen and seek no further challenge. But what of the more able, even just the above average, who seek a more challenging interaction between themselves and the machine but could not possibly contemplate a BASIC assault course? Well –

> Computers and their languages were
> lost in darkness and night.
> Papert said let LOGO be
> and all was light.

Perhaps this is a somewhat rose-coloured view of the situation but still LOGO does provide light at the end of the tunnel for the more enquiring mind (even if pushed initially by 'Miss').

Previously two colleagues and I had encountered LOGO as part of an initial training course soon after we had taken delivery of our respective 480Zs. We had liked LOGO. It seemed interesting and seemed to have possibilities for stretching brighter pupils. Separately we played around with it at home and tried to find applications to our maths schemes, or even a convenient slot where it might be a useful extension to some geometry work. All nice conventional ideas.

The spark of interest was not ignited into a flame until last March when one day of our maths course was devoted to becoming acquainted with LOGO. I suppose it could be argued that the freedom from class pressures, marking and repetitious demands of children enabled us to enjoy the same reactions that a group of *evenly matched* children must feel.

But the spur of hitting ideas off each other was infectious. Together we worked to solve a problem, dredging back in our minds for half-forgotten geometry and using it constructively to solve problems we had set ourselves. One would grasp an idea and race ahead leaving the other two in her wake struggling to keep up. Then the line of thought would come to a dead end and another would come to the rescue. It was very stimulating and perhaps the best introduction possible to LOGO. For sharing with other aware minds allows teachers to come a little bit closer to what children themselves experience.

Even more importantly something is achieved, not just mastery of a technique but communication and comradeship with another individual. Surely all good computer programs should make allowance for discussion and reasoned thought and arguments. LOGO should be shared even by adults. Now we are wondering how to pass on this experience to children.

LOGO notes

'That's all we needed!'

Dear *MICRO-SCOPE* Readers,

I am preparing a book on the use of LOGO in the classroom. The book is primarily aimed at primary school teachers, but will have some relevance to lower secondary school as well.

I would be very interested to hear of any experiences teachers have had using LOGO in the classroom, and ways and means they employed to introduce the skills and concepts of computing to children of different age groups. This can include games, etc. All contributions will be acknowledged and postage refunded.

Please contact me at the address below – many thanks.

Tony Mullan
54 Copse Road
Plympton
Devon

Conference review — CAL 83

held at the University of Bristol, April 13–15, 1983

Elizabeth Moore
Research Student, School of Education, The Open University

The CAL (Computer Assisted Learning) 83 conference was the latest in a series of bi-annual meetings making reflective contributions to the evolving role of computers in education and training. In this review, it is only possible to skate through a selection of the conference items.

Firstly there were speakers who claimed microcomputer technology can change the face of education. The assumption of those who support 'computing as a second language' is that children will benefit. Robert Kowalski, of the 'Logic as a Computer Language for Children' project at Imperial College, proposed that children should learn a language such as Prolog. He said logic is very important; and logic is a tool for change in maths, linguistics, philosophy, and law.

Secondly there were speakers claiming that micros in the classroom enhance established subject areas. Deryn Watson, of the 'Curriculum Project' at Chelsea College, argued that CAL can be integrated with the curriculum as a resource for teaching and learning. It can be modelled on teacher-centred approaches to education and, as such, may be attractive to teachers. She stated that only some of the pupils' CAL activities should be at the keyboard.

Issues in the building of computer-based teaching systems were addressed by Kenneth Tait of the Computer Based Learning Unit at Leeds University. He declared that CAL sequences should be linked with the existing curriculum. There were recommendations about the content of CAL programs and the extent of teacher control. Whether or not teachers want such control was queried.

Tim O'Shea, of the Open University CAL Research Group, said that the only valid type of CAL evaluation is formative. A workable development method involves a design stage, a prototype prepared for testing, followed by implementation in the 'real world', and an evaluation-change loop. Tim O'Shea suggested a team of professionals be included in CAL production: programmer, educational technologist, psychologist, and artificial intelligence (AI) expert.

How might children be involved in the development of CAL materials? Alfred Bork of the University of California at Irvine, described how CAL products were piloted in libraries. Children rarely approached machines alone and were quick to leave if CAL sequences proved boring. This kind of 'get up and walk away' rating only contributes to a partial validation of materials. It does not cope with their content validity; children can be motivated to use work cards as well as CAL materials that are inappropriate. Certain styles of CAL reek of excess work card use that good primary school teachers want to avoid (even if computers offer a modern means of display, as well as the marking of each child's or group's performance). Alfred Bork concluded that education in the future could be worsened by the introduction of computers; importantly, for the optimists, he conceded that people's own visions can influence the future.

Another question is: what happens when the computer becomes so much part of the classroom furniture that novelty no longer augments enthusiasm? Presentations from the collaborative ITMA project, based at the Shell Centre for Mathematical Education (University of Nottingham) and the College of St Mark and St John (Plymouth) helped provide answers. Computer programs in this ITMA evaluation study had a range of popular uses, though none was labour saving. The uses ranged from the electronic blackboard (favoured by teachers) and class games (favoured by pupils) to 'finding out' (favoured by the observers). Observations showed the teacher's role to vary from keyboard operator and classroom manager to fellow pupil, facilitator, and catalyst. The finding that teachers sometimes undid the design features of programs (especially those demanding an 'alien' style) is not surprising since evaluations of other educational materials show that teachers may adapt these to their own styles and reject ones that do not suit. The ITMA project teams suggested that a wider range of educational software will be available in the future but it is worth doing systematic evaluations of what is available at present.

There were conference murmurings along a continuum: type A people thought CAL in all its exisiting manifestations (warts and all) should be influencing the changing curricula. Type B people, whilst not denying that computers in the future may have some educational value, declared that this is not yet viable. Types B were bemused when told that Query languages should be less like English to 'make it easier'; they

would most like their databases in the form of Bound and Orderly Organised Knowledge-devices (BOOKs) that can be dropped on to the ground without breaking, and have pages flicked through in any sequence without the accidental destruction of files.

In looking around the display areas of the conference the limitations of 80 character by 24 line screens were a point of concern. Also the garish colours and flashing displays were simultaneously attention-grabbing and aesthetically distasteful. Although the question of displays was mentioned by the conference speakers, it was the displays themselves which shouted for improvement. However, the computer-linked videodisc and videocassette demonstrations whetted appetites for future applications. Ugly 'high res' graphics on CAL programs may be hard for young children to interpret when they are still grappling with the ideas of symbolic representation; but research says that young children are competent TV viewers, so why not make learning materials that incorporate TV quality images?

Constructive commentaries about hard-, soft-, and course-ware were forthcoming at CAL 83. When selected papers from the conference are published in the Pergamon Press journal *Computers and Education* there will be discussion of the issues with theoretical and practical implications for educators. Such papers offer the latest episode in a fascinating saga.

The PCW show

Senga Whiteman
Newman College

The *6th Personal Computer World* show was staged at the Barbican at the beginning of October. It spread over two well-appointed exhibition halls, and the organisers generously donated exhibition space to MAPE. The show is populated by trade stands; business machines and peripherals abound as do PR ladies with an apparently endless supply of balloons, plastic carriers, stickers/badges and little furry creatures. If you are a schoolchild the success of your visit is measured by the extent to which your shirt or jumper is obscured by the aforementioned free gifts!

The MAPE stand was staffed by volunteer members, although their enthusiasm at 10 am had waned a little by 7 pm! Some misapprehensions had to be sorted out before genuine visitors to the stand could be identified. Many people thought MAPE was a software production house, others thought we were selling computers. Those visitors who were genuinely interested tended to fall into two broad categories. Firstly there were those who were interested in computers and education because they were teachers, parents or governors. Secondly, and these were often disguised as members of the first category, there were those who were 'interested' in education because they wanted to produce software for the educational sector. The queries from members of the second group tended to be rather repetitive: would MAPE endorse their products? . . . How could they get access to a group of teachers to find out what programs teachers would like? (You specify, me get rich).

There may be schools all over the country who wish the MAPE stand had never existed. A large number of people took information/application sheets to pass on to the headteacher of their child's school. They seemed to regard MAPE as further ammunition in their campaign to 'computerise' the school. There is a definite fear among parents that their child will be deprived if he/she attends a school which does not demonstrate a total commitment to using computers. The amount of parental pressure being directed towards head teachers and teachers must be enormous. I wonder whether it produces the desired result?

Some parents appeared, to me, to have lost their sense of proportion: several asked what software was available for children of eighteen months. The image of a toddler sitting staring at a VDU makes me rather sad. I've no doubt that they can be taught, or trained, to press the appropriate keys but what will they be doing? Playing games? Will we be breeding a generation of people with amazingly fast responses and little else?

There were two computers on the stand, a 480Z, courtesy of Research Machines Ltd., and a BBC Model B, courtesy of Acorn. We demonstrated programs from the forthcoming MAPE tape. It was interesting to note that these programs proved enormously absorbing to both adults and children. (For future reference I'd like demonstration programs to be entirely internally documented – explaining how to work even a relatively simple program ad infinitum for 9 hours tends to addle the brain.) Many people wanted to buy the programs. The fact that they were not for sale provoked an incredulous response.

Some images remain in the mind. I can picture a group of teenagers of fairly aggressive appearance and attitude being quite transfixed by 'Mousey Mousey', in which you move a piece of cheese around a screen looking for mice. What price Space Invaders? There was also a bright-eyed little boy who was so pleased with his ability as a bargee, via 'Locks', that he seemed to expand in all directions!

The purpose of the stand was to spread the word that MAPE exists, and explain what it is. We had application forms on display; other publicity material relating to CET was available. Visitors staggered up, their free carriers bulging with literature, and collected one of everything without a word to us. Do you read pamphlets, randomly collected, after the event? I don't. Perhaps they have one of those machines that turns paper into logs.

We did talk to lots of people who were involved and genuinely concerned with education, and who were interested in what microcomputers can offer. Most of these were unaware of the existence of MAPE.

At the end of the day we were left with an overall impression of a tremendous amount of public interest in micros in schools. But there tended to be complete ignorance about what the school would actually be doing with the microcomputer. Its presence is seen as vital but no-one knew why. The organisation of a school has to be adapted in order to accommodate a computer. Have schools also a duty to educate parents about the ways in which a micro can be used? Many very young children are spending hours at their home computer. Parents who have taught their children to write in upper case cause the average reception teacher a little pain – how will we cope with computer whizz kids (especially if there is a difference between the teacher's and the parent's ideas of what computer literacy involves)?

Those are some of the questions that arose, in my mind, after a day on the MAPE stand. It was an experience not to be missed, but not to be repeated the next day either. I hope the visitors gained as much information and food for thought as I did.

Book review

Computers and Education, World Yearbook in Education 1982/83
J. Megarry, D.R.F. Walker, S. Nisbet & E. Hoyle (eds.) (Kogan Page, London, 1983, £15.95)

This book gives the reader a detailed (but not parochial) insight into the present and potential impact of microtechnology upon society. The editors have classified the contributions under four major topics: issues and problems; computers in action; national case studies; and computers and the curriculum. This Yearbook emphasises the educational implications of computers and every topic allows for the development of general and specific insights. Two additional sections give more information by means of a glossary and detailed bibliography.

The first topic is a general one and some of the ideas expressed may already be familiar to readers; nevertheless Eric Hoyle's views on innovation and strategy continue to be both sceptical and persuasive about normative contexts and the teacher's role. Gary Boyd's article about the relationship between the learning process and the learner is novel and provocative with its emphasis on the human need to demonstrate competence and knowledge.

Part 2 (Computers in Action) and Part 4 (Computers and the Curriculum) are of particular interest to teachers. The contributors in Part 2 include Jim Howe on a pupil-centred classroom and Bill Tagg on a software library and its dissemination. Bob Lewis writes on the relationship between the microcomputer and the teacher's needs: the management of learning and the nature of distance education are also discussed. The practical emphasis of this section is continued in Part 4, which deals with the contribution made by computers to all levels of education. Examples given include basic skills, computer studies/computer education and adult computer literacy. Of particular interest to those in teacher training are Benedict du Boulay's comments on the uses of simulation which are original and stimulating.

The national case studies (Part 3) come from France, South Africa, Canada, New Zealand and Great Britain. Richard Fothergill's account of the planning of the Microelectronics Educational Programme makes a heartening contrast to the situation in Quebec where any official policy about the uses of computers in education has been inhibited by the division of responsibility between teaching and management staff.

A useful glossary and excellent bibliography which complete this book make it very good value for money. The cost (£15.85) may limit it to libraries, but it would make a useful staff-room reference book as well as a relevant personal resource; and the comments of its contributors upon a variety of computer topics provide interesting, literate reading.

Ann Wright
College of St Paul & St Mary, Cheltenham

Software review

Logic Blocks – MEP (Software pack 2)

'Thinking about the computer's role in education does not mean thinking about computers, it means thinking about education' – Alan Ellis (quoted in the *Micro Primer Reader*, p. 38)

In the sphere of educational computing at the primary level there appears to be now a whole range (some would say 'progression') of programs from the drill and practice type via the more open-ended simulations and data-handling programs to such languages as LOGO and Prolog. To put it another way, the range of use varies from a convergent 'yes/no', 'right/wrong' approach in which the computer can be said to dictate the course of events, to a more divergent, problem-solving type, in which the computer simply serves as a 'thinking tool' for the user. Such programs are often described in terms of 'learning *thinking skills*' or even 'learning *learning skills*', in which the ability for clear thought and logical reasoning obviously plays an essential part. This may help to explain why MEP considered logic to be of such importance that it warranted the inclusion of a set of programs devoted solely to that subject.

The Programs

In fact, this set of programs is unique in that it is the first time MEP have brought out a suite of four (!) programs specifically geared to the use of another specific educational resource. They are described on the back cover as forming a series of four programs for the 8 to 11 plus age range: 'covering basic thinking skills and deductive exercises (both simple and complex). These exercises are related to Dienes' blocks.'

Vennman

The first program in the series, *Vennman*, has the following objectives:

- to reinforce logical thought using Venn diagrams;
- to be guided in moving from purely concrete thinking to more abstract symbolic thought. (Documentation Text, p. 11)

This takes the form of 'which letter is in the circle, but not in the square and the triangle?' The questions can be stated in words or symbolic form and are put randomly, though the letters in the various areas are always in the same place. However, after an incorrect answer the correct letter is indicated and that question goes back into the 'pot' only to come up again at some stage – so it is entirely possible (and quaintly logical) for the child to keep giving the same response until it is matched by the 'correct' question. Finally the curious squiggles thus revealed join together 'to form a fascinating and delightful ending'. Luckily none of the other programs has the same ideas about rewards!

On the whole, this program seems the least interesting, neither particularly motivating nor flexible, since it only allows the choice between two or three shapes, with either words or symbols for the question. However, seen in terms of its aim – using the micro merely to reinforce the use of logical thought and symbolic logic with Venn diagrams – and presumably with the younger age range, it may well serve as a reasonably useful introduction.

Vennkids

The second in the series is Vennkids, and should be seen as a progression from *Vennman*. The objectives as stated are exactly the same as for *Vennman*, but this time we are told that it offers an 'ideal extension by reinforcing classroom work on the use of Venn diagrams as an aid to logical thinking and sorting' (p. 20). It has the same boundaries of a circle, square and triangle as *Vennman*, this time with random values for the various sections, a selection from a possible 30 questions, plus a 'touch of humour beloved by 9-year-olds' in that the labels are 'red hair, big boots, fat faces'. (There's no need to worry if your children don't possess the same sort of humour – the documentation indicates how the labels can be changed!)

The only flexibility here is in the number of questions (a maximum of 20 out of a possible 30) that the users can stipulate for themselves. But, on the other hand, the 'help routine' with appropriate messages is far superior. The first level cleverly isolates the areas in question by colouring them in magenta, and the question is repeated. If the answer is wrong again, the actual values concerned are ringed in green, and the question repeated. If the input answer is wrong for a third time the user is now requested to call the teacher over to help. If, however, the right answer is not entered at this stage the program gets caught in an endless loop. The motivation, such as it is, consists merely of a score expressed as a fraction or as a percentage.

Once again, bearing in mind its rather modest aims, the program should be quite successful, if somewhat limited and inflexible. Some variation in the shapes used or in their displayed position would add to the program's effectiveness in

giving thinking practice. Another useful additional facility would be for the children to be able to set up their own diagrams, labels and appropriate questions.

(Missing) Shape

The third program, *(Missing) Shape*, follows a different tack and is related specifically to Dienes' blocks, although in fact it would be suitable with any other 'logical attribute blocks' of a similar type. Its objective is: 'to gain practice in logical thinking.' It further sets out to exercise the children's 'powers of deduction' (p. 28), by getting them to identify a 'missing' fourth Dienes' block on the basis of the attributes of the other three displayed on the screen.

Here there are no extrinsic rewards. The block concerned will appear on the screen if your answer is correct, and the program can keep going ad infinitum. If the answer is wrong then more help is given by listing the relevant ticks or crosses underneath the attributes. This may also continue in an endless loop, presumably on the assumption that, with only 36 permutations possible and with all those 'clues' offered as help, even an idiot must eventually get it right. On the other hand, no allowance is made for only slightly incorrect spellings on the part of the user, although the micro does 'know' to which category the attribute entered belongs. The shapes used are restricted to squares, circles and triangles, being either large or small, thick or thin, and for some undocumented reason either red, blue or GREEN!

Once more, the actual value of this program seems fairly restricted. The pattern of deduction is based on there being only one difference between each pair of blocks – two or more would have made the program much more thought-provoking! Again, perhaps children could have set up their own problems. They are actually encouraged to do this as a follow-up activity with all the blocks, 'in order to take advantage of the high motivation aroused by the use of the program'. (p.32)

Gates

The final program, *Gates*, has the same subject area as before, but the age range is now 9–11+: 'Objectives: The program will enable users to:

- develop a better relationship between the understanding of logic and its logical expression in language;
- practise sorting and classification skills.' (p. 35)

This program involves the sorting of 36 blocks (i.e. no rectangles, again) through 'gated' networks, which can be chosen by the children themselves, but 'perhaps its best use' is for the teacher to set a problem for the children to solve. 'This can be rather demanding!' (p. 36)

It is claimed to be 'a very powerful program' for the teaching of logic in maths, in conjunction with the blocks themselves. It further offers 'extensive practice in logical thinking and problem-solving, in decision making and prediction' with facilities for 'accurate monitoring.' (p. 36) This latter remark presumably refers to the fact that the blocks at the ends of each route can be listed. It also encompasses quite a range in that you can choose from 1 to 4 gates, of various complexity.

This program really does now begin to exploit some of the virtues of a micro – it utilises its speed and graphics potential, offers immediate feedback (so that you can see the results of an action straightaway), immediate erasure of errors and re-displaying new networks, and allows the children to work in co-operative decision-making, logical thinking, predicting and problem-solving situations at their own levels. What is more, here are skills that can be transferred to other topics from flow-charts to simple electronic circuitry.

Conclusion

Estimating the educational value of anything is not easy at the best of times. In educational computing it's even worse. Given such imponderables as imagination, motivation, the quality of the engendered learning, the educational philosophy of the school, together with the lack of agreed standards and criteria on educational programs and the current 'state of the art', a 'useless' program to one teacher can be 'essential' to another! In essence, however, the computer brings nothing new to the field of education in the sense that it is and has always been, necessary somehow to ask:

(1) What are the children actually learning?
(2) Is that learning 'worthwhile'?
(3) Could that learning be achieved more effectively another way?

As far as these four programs are concerned there is little doubt that they would help children learn, or, more accurately, reinforce their learning about logic, its use and its expression in symbolic form. Indeed, the discussion and verbal reasoning so encouraged should be a big bonus. Moreover, to use Ennals' words, developing logical thinking in children is 'firmly rooted in academic tradition and not merely the product of a particular generation of technology' (*Beginning micro-Prolog*, p. 13). Set theory in the form of Venn diagrams using Dienes' blocks as Papertian 'tools to think with' is one of the major ways of aiding the acquisition of logical thought (particularly, some would say, since the demise of Latin). Assuming, then, that logic is important as a subject in its own right as well as an essential aspect of the skills of learning and thinking, the

answer to the second question must be that these programs can justifiably claim to be educationally worthwhile.

The third question, however, clearly begs another – why bother to have 'computerised logiblocks' anyway? A partial answer is given throughout the documentation, namely that these are 'exercises' aimed at promoting logical thought, and are not to replace concrete work with Dienes' blocks, but rather 'to work in parallel with such activity'. What they do offer the teacher, in fact, is what virtually amounts to another 'pair of hands' in the classroom. The programs do *not* replace her by any means, but they do allow her to extend her range of activity a little further. Indeed, the programs do, on the whole, build on several virtues of good computer practice:

- well constructed programs;
- generally, well 'error-trapped';
- good motivation;
- instantaneous feedback;
- ease of use, of erasing errors and setting up the display again;
- attractive, clear presentation;
- good use of dynamic graphics;
- variable pace, suitable for slow and fast learners;
- no components (i.e. the blocks) to lose or damage;
- engenders some sort of structure to the language of the user in its interaction;
- some flexibility in use, by individual children, or groups (or even the whole class if desired);
- some flexibility in the levels of learning;
- good accompanying documentation, including many useful suggestions for activities both before and after the programs.

In some ways, there is in fact a danger that the teacher may be tempted to ignore the caveats in the documentation, forgetting that a computer offers only a surrogate reality and is not a replacement for 'the real thing'. It would be all too easy to leave the logic blocks in the stock-room.

However, the range of this series, from the convergent, computer-directed drill and practice of *Vennman* to the more divergent, learner-directed problem-solving type of *Gates*, should provide a valuable teaching resource for helping to develop logical thinking in children. But it is still ultimately in the hands of the teacher – or rather in the teacher's head – to capitalise imaginatively on the work done to find valid, relevant and interesting links and applications to the real world. It is the transfer of these skills that will testify to the value of these programs.

The MEP Study Text makes the claim that the micro is 'the most powerful educational tool we have ever possessed', adding quite rightly, however, this rider: 'The use of micros in education education is not guarantee of an educational advance'. (p. 164) This set of programs, *Logic Blocks*, offers, at the very least, a significant move in the right direction by bringing a new depth and dimension to the use of logic blocks and of logic itself. It should certainly aid children in their 'learning to learn'.

Barry Wake

STOP PRESS

Received, too late for review:

T. J. Fletcher: Microcomputers and Mathematics in Schools (DES, 1983)

A discussion paper raising many important and some controversial issues, and including sections on the primary sector and on resources, staffing and in-service training.

CET News 19

(from CET, 3 Devonshire Street, London W1N 2BA)
This summarises recent publications, including:

CET/MEP Information Sheets nos. 1 to 5
Relevant to special education, with reports on projects and software.

John Duke: Interactive Video: implications for education and training (£10.00)

James Gilman: Information Technology and the School Library Resource Centre: the Micro-computer as Resourcerer's Apprentice (£12.00)

The Dudley Programs

Just published by Heinemann Computers in Education – *The Dudley Programs*, a suite of 24 programs for primary schools.

These are the result of exemplary co-operation between teachers, programmers and publisher. The ideas originated from teachers and advisers in Dudley, sparked off by an in-service training course (inspiration here for all INSET organisers!); and the programming was done at Five Ways, with their usual professionalism.

We hope to carry a full review in our next issue: meanwhile, further details from Heinemann (22 Bedford Square, London WC1B 3HH).

A new approach to the school curriculum

Reg Eyre
College of St Paul and St Mary, Cheltenham

It is likely that there are more microcomputers in the homes of children than currently in any class or school.

This situation may be temporary, or we may yet see classrooms full of microcomputers. While we travel to this particular form of Utopia, I think an evaluation of the relationship between the use of microcomputers in school and at home should take place.

The recent decision by Clive Sinclair to make the *Micro Primer* software pack available for parents to buy could forestall some teachers who would wish to use the same software at school. The predictable reaction of the child will be that he has already played with it at home. It is this type of problem which suggests to me that the MEP education programme could easily be extended to help parents, so that we could develop co-operative efforts. We will have to show parents who have machines and relevant software how to use them to enhance their children's education without hindering the efforts of the teachers in schools. Another aspect which will have to be dealt with concerns the children who do not have such equipment at home; are they at a disadvantage? or is this type of 'disadvantage' acceptable?

The majority of educational software has been of the drill and practice form. That this situation has arisen is understandable, since such programs are relatively easy to produce, and they appear to support current teaching methods. A minority of software produced does indicate that educationists are using the microcomputer's strengths to change the emphasis in schools from teaching to learning.

I think that the new emphasis will concern information collection, handling and retrieval, word processing and control technology. The ability to manipulate, sort and retrieve vast quantities of data and information will mean a fundamental shift away from learning facts to understanding and interpreting the reasons for the original collection of such information. This feature could well have far-reaching effects on the teaching, learning and examining of the humanities in particular. The development of *Microquery* by AUCBE is already building a momentum of change in the way history is presented to children. The derivatives of *Microquery*, such as *QMAP* and *Quest* will add a new dimension to the teaching styles of geography and history.

The whole concept of control using microcomputers could mean a major shift towards a composite subject which would encompass mathematics, electronics, craft and design, as well as developing communicative, investigative and problem-solving skills.

The versatility of microcomputers for developing these various new areas of the curriculum demonstrates how much more powerful they are compared with the programmed learning teaching machines. This aspect alone indicates to me that the use of microcomputers in education is not going to be short-lived.

I believe that teachers have already intuitively reached this conclusion, which would explain the clamour for relevant INSET courses. At the moment, too many of these courses are concentrating on programming in BASIC, which is irrelevant. Not many teachers write their own textbooks, so I cannot see why they might be expected to write their own software. The only reason they might wish to know BASIC would be in order to modify or personalise existing software. If we must teach teachers a computer language, I would prefer that we taught them LOGO or PROLOG, which could be of use to the children as well.

LOGO especially has the potential of allowing children the freedom to learn about their environment by exploring new ideas using simple language which can grow in a sophisticated way. This, we hope, is similar to the way in which children develop their mother tongue as they mature.

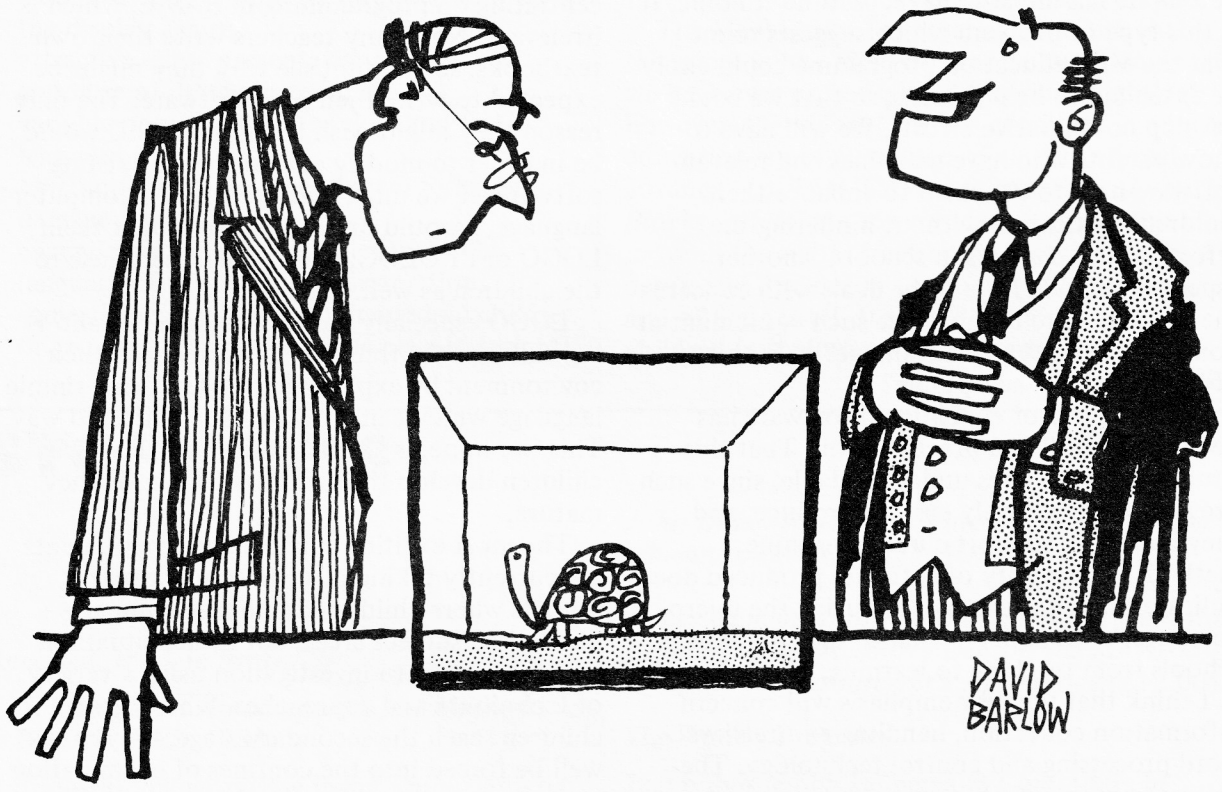
The most exciting curriculum developments are currently taking place in some primary schools where children do not see compartmentalised subject areas, but rather situations which are open to investigation using a variety of techniques and approaches. When these children reach the secondary stage, they may well be forced into the confines of examination subject areas. I would hope that the secondary schools would foresee the problem, and be looking for original and innovative solutions befitting education in the 1980s.

My crystal ball gazing suggests that a grouping of traditional subject areas might occur, leading to the formation of faculties named perhaps *communications* (incorporating English and foreign languages, computer programming, media studies, drama, art, music, religion, sociology, typing); *control* (incorporating the natural sciences, mathematics, craft, design and technology); *information technology*

(incorporating geography, history, economics and office skills) and *leisure activities* (literature, art, music, dance, drama, sport).

One of the major obstacles to such a rearrangement of the school curriculum will be the traditional requirement for examinations, where passes are used as stepping stones for further advancement. Another will be the entrenched attitudes of some teachers in the secondary sector. Unfortunately for these teachers, the fact that existing curricula are totally inadequate for the majority of school-children has been noticed, and a revolution in the schools is already beginning. With high unemployment, initially caused by inflation but increasing because of improved technological methods, the clients of the school system are already questioning what is being taught there, and suggesting that we need an education for living in a world where different concepts of work and leisure will operate.

The Government has given a push towards this Brave New World by providing some hardware and software for schools. It must also recognise that the problems being raised should be discussed by the whole of our society, so that we can all decide whether we want to go in this particular direction, or choose a semi-Luddite approach and aim for a typically British compromise. My hope is that we will not allow changes to happen by accident with a prayer that everything will turn out all right.



'I thought it probably best to start small.'

LEA support services

Roger Keeling
Newman College

All LEAs are by now aware of the immense in-service training task that has been imposed upon them by the DoI scheme. In most cases running the statutory two-day *Micro Primer* course is a sufficient headache. Yet we must look to the future – what follows *Micro Primer*? It is inevitable that the software in the pack will become dated very quickly, but it will hopefully have whetted the appetite of many teachers.

What other courses should LEAs be considering? Here are a few ideas.

1. Elementary familiarisation

(5 x 2 hour sessions) Given that the DoI courses cater for only two teachers per school, the overwhelming demand is still for courses at level zero. This is the one type of course that is continually oversubscribed. It needs to cover the fundamentals: for example, how to wire up a system, how to load a program, how to manage a micro within a particular classroom, and exemplary use of a few programs. Above all, it needs a sympathetic tutor who realises and appreciates the fears and misapprehensions of many of the audience.

2. An overview

Generally a one-day course, catering for a large audience (60 to 100), and aiming to bring teachers up to date with latest developments. Probably an introduction followed by a number of optional demonstrations (for example, choose 5 from 8). Such topics may include LOGO, information retrieval, simulations, the BBC Buggy, interactive video, Prolog.

The disadvantage of this type of course is that it raises teachers' expectations, but does not give them the necessary hardware/software to go back to the classroom the following morning and implement what they have seen.

3. Specific topics

(5 x 2 hour sessions) Here there is an overlap with the course above, but this course aims to concentrate and focus attention on one particular topic and provide ample hands-on experience to support it. Such courses could cover LOGO, information retrieval (including the construction of a detailed database), different simulations, or the use and classroom applications of a friendly word processor.

4. Software evaluation

(Regular meetings) This course would bring together interested and enthusiastic teachers to view and assess the latest software, in order to determine suitability for use within the LEA. Hopefully the sessions would also lead to notes regarding suggested modes of use and the preparation of support material where appropriate.

5. Specification workshops

(Regular meetings) The aim would be to gather together a group of imaginative and creative teachers to develop new ideas for software. It is essential that there is programming support available to try to implement the better ideas.

If the LEA appoint a programmer to translate the idea into code, why not base such a programmer in one of the schools of the specification team? Here it is possible to monitor developments closely on a daily basis – a far superior system to trying to communicate over the phone to someone hidden away within the vaults of the local LEA teachers' centre.

6. Primary/secondary interface

(One day) One of the major problems looming on the horizon is the failure of many secondary schools to realise that future intakes will be computer literate and will expect to see and use micros in their first year – and not have to wait until their fourth year!

It is time to start approaching this problem by organising courses for appropriate secondary staff, to show them what is happening with micros within the primary sector. I am sure many would be pleasantly surprised, and would hopefully reconsider a policy which sees the micro as an 'upper school resource'.

7. Control technology

(10 x 2 hours) An area that is becoming increasingly important and will continue to do so with the arrival of the BBC Buggy, simple data capture/logging equipment and cheap robotic arms.

Generally, courses need to start from scratch, keep to a small number of participants, and be backed with the necessary hardware – practical sessions are the order of the day.

8. Curriculum implications of the micro

(3 x ½ day) This course would be for *Head-teachers* only, and would focus attention on strategies for introducing the micro, as an effective teaching resource, into every classroom. The leadership and enthusiasm of the head is crucial in ensuring that this is achieved. If the head fails to accept the responsibility, then other staff can't be blamed for following suit. Too many heads are delegating the tasks; yet the implications for the future curriculum are so far-reaching and so different from anything we have known in the past that it is not an area that should be delegated. (In the case of some heads, perhaps it is more a case of abdication of responsibility.)

9. Applications of the micro

These courses would concentrate on the place of the micro in specific curriculum areas (e.g. history, geography, language, etc). They would examine appropriate software and resource material. There is no reason why such courses should be devoted solely to the effect of the micro. In fact, to place the emphasis on the subject area rather than micros is one way of attracting teachers who might otherwise be put off.

This lists some of the possible courses LEAs and colleges could be offering. All are in fact essential – which simply serves to illustrate the uphill task facing all local authorities.

We would welcome articles describing the efforts of LEAs in this area and describing the types of courses teachers have found valuable.

There is, by the way, one other type of course:

10. BASIC programming

(*ad infinitum*)

```
5 INPUT commitment,
  perseverance
10 IF commitment < 40 hours
   OR perseverance < totally
   dedicated THEN forget it
   ELSE question sanity.
```

The places of women

Senga Whiteman
Newman College

Newman College ran its first Diploma course in Computer Applications to Primary Education (5 to 13 age range) during the last academic year. A new course has just begun. There are very few courses, over the country, which concentrate on micros and primary education and if this year's intake, in terms of male/female ratio, reflects any trend in primary education, the implications are disturbing.

Thirteen teachers had places on the 82/3 course, and of these nine were men and four were women. The number of original applicants was thirty-five men and nineteen women. Twenty-one teachers have just begun the 83/4 course and of these twenty are men and one is a woman.

How did that happen? Here are the figures:

	Male	*Female*
Number of applicants	95	46
Number offered interview	62 (65%)	24 (52%)
Number offered a place	40 (65%)	15 (63%)
Number who accepted the place, subject to secondment	38	15
Number seconded by their LEA	20 (53%)	1 (7%)

(NB Percentages refer in each case to the number immediately above in the table.)

What has happened this year? The male/female ratio is steady throughout the table at 2 or 2½ (close to last year's ratio) – *until the last line*. Why did so many women fail to get secondment? It would be interesting to know the full picture of secondment in individual LEAs – perhaps women are being seconded, but to other courses. There are far more women teachers than men in primary education, although men dominate, disproportionately, the positions of responsibility. Is it inevitable, therefore, that they will also be more likely to be seconded?

Anyone who becomes involved in the field of micros and primary education will find lots of women with a high level of commitment and expertise. It is an area in which women have demonstrated their competence. Will this be reflected in the pattern of development of responsibility and initiative? Will there be equal opportunities? Will in-service provision increase to match the rising demand?

I have posed a few questions in this article and there are many other unanswered questions. If you have any to ask, or can offer any answers, please write to *MICRO-SCOPE*.

A story to finish. The teachers on the Diploma course visited a local school. The headmaster surveyed the group and asked the woman if she was the only one on the course. She replied in the affirmative. A male voice was heard: 'She's our mascot!'

The MAPE Tape

The MAPE Tape

Dear Editor,
Thank you for the MAPE tape. Any suggestions as to what I can do with it? I don't own, or have access to, a BBC or RML machine normally; and I suspect I'm not the only one. I think it's a good idea to give software away, but why favour only BBC and RML machines? Whereas it would of course be impossible to produce a version of each program for every computer that may be available to every MAPE member, it is worth remembering that three different models were recommended for primary schools – so what about the poor old Spectrum? Why is this model so discriminated against?

I know of authorities who have not given their teachers a choice of model. Perhaps it does make sense for an authority to standardise on one model so they can provide back-up and support but I have met teachers whose school is not going to get a computer at all because they believed they could only have one particular model whose price, even with 50 per cent grant aid, was too excessive for their budgets. I also know of other authorities who have deliberately not forwarded Spectrum orders and have met teachers who think their wait has been occasioned by Sinclair! I, personally, have always thought the Spectrum to be the best choice for primary schools for reasons too numerous to go into here.

But back to the MAPE Tape. I would not suggest distributing free Spectrum programs to all members. There is more software for that machine than others anyway. The majority of members will have BBC machines. Perhaps 480Z needs programs as, of the three machines, it has the least software. Do these arguments add up to giving away free BBC and RML software to all members, then? Indeed not! I feel what is required, before this venture is repeated, is to determine the needs of members whose money is being spent in this way. Perhaps a simple questionnaire e.g.:
Do you want software for BBC RML Spectrum other none ?

Meanwhile, if Spectrum-owning members wish to send me their MAPE tapes and 17p in stamps for return postage, I will enlist the help of my computer club members and use the school machines to re-record some programs for them. They won't be the same as the MAPE ones though and, depending on demand, members availing themselves of such an offer may have to be prepared to experience a (hopefully short) wait for a reply.

Chris Robinson
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Iver Heath
Bucks

Editor's note:
The demand for software is enormous. MAPE hopes to contribute to the needs of as many members as possible. Figures from the Dept of Trade and Industry indicate that less than 5% of machines bought under the scheme are Spectrums. Conversion of software for another machine takes a lot of time.

It was more practical to supply the tape to all members than to attempt to determine which ones could not use it. Hopefully such people will pass them on in a spirit of co-operation.

Incidentally, *MICRO-SCOPE* only supplied the documentation. Please refer problems with cassettes to Barry Holmes or the distributors at the address given inside the cover of the 'Mape tape' booklet.

The MAPE tape

Two bugs have been brought to our attention on *Locks* and *Othello* (BBC versions).

Locks (BBC)

On line 9040, replace:
(ABS (X-8) = 468 AND BG = 1
by:
(ABS (X-12) = 464 AND BG = 1
The rest of the line remains the same. This prevents the boat turning into a submarine under one particular circumstance (namely, boat in bottom lock, water level high, move, crash, open bottom paddle . . .)

Othello (BBC)

Insert: 136 S1 = FALSE
Append to 170: ELSE S1 = TRUE
Append to 180: :SI = FALSE
Replace 270 by: UNTIL TS> = 64 OR (SI AND S = 0)
This cures the loop that the program enters if neither player nor computer can make a move.

(My thanks to Phil Turner for these 'cures'.)

Most users will have observed that the order of the programs on the 480Z side of the cassette is: COUNT OTHEL MANGON TCHEST MOUSEY LOCKS TAXMAN; and that there is about a 20 second delay before the BBC programs start loading.

Roger Keeling

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ERRATA - 3rd Para. Editor's Note

Please refer problems with cassette to the Computer Education Centre, Newman College, Bartley Green, Birmingham B32 3NT, marked for the attention of Senga Whiteman.