

**Bangor University**

## **DOCTOR OF PHILOSOPHY**

**The purpose of microcomputers in primary education.**

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## THE CASE RECORD

(Companion volume to: "The Purpose of Microcomputers in  
Primary Education")

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EARLY SCHOOL VISITS: June/July 1985.

Before the selection of the case study schools took place, visits were made to a number of other schools in the county. Discussion with the then M.E.P. (Wales) Primary Co-ordinator (Mr. D. Price) took place: he provided a list of 13 primary schools which, to his knowledge, used the microcomputer.

After making contact with nine schools, a series of visits was undertaken across the county during June/July 1985. Two secondary schools were also visited.

The following fieldnotes were made. (See later for case study schools' fieldnotes. Secondary school visits not recorded in Case Record). Note: some code pages apparently missing: not included because not relevant (e.g. repetitive).

CODE: (a)f(J85)1

SCHOOL (a) DATE: 03/06/85  
EQUIPMENT: 2 spectrums, 1 BBC, no disk-drive  
No. OF STAFF USING MICRO: 1  
USE: Logo (chip).  
AGE OF PUPILS using computers: 10-11 years.

Questions.

How much time on the computer per pupil per week? 1 hour.  
Children work with the computer on their own, but two working on different machines side-by-side.  
Class introductions to new ideas - e.g. variables, recursion.

CODE: (a)f(J85)2

Where is the computer housed?  
Computers "cornered-off" from rest of class - at one side.

Home computers: 50%+ of pupils have own computer. One boy (R.) has BBC and spectrum (and Logo).

CODE: (a)f(J85)3

What in general do the pupils think of the computer?  
Enthusiasm good - work continued at lunch-time. But parallel Welsh-medium top Junior class not so enthusiastic.

CODE: (a)f(J85)4

Comments.

Logo work in top Junior class prompted by the class teacher's M.Ed. work. Lots of good work going on here, but not throughout the school.

When at the computer, the children work alone, from session sheets. Teacher helps at times or delegates good/expert pupils to help (e.g. R.).

Programs not saved, rather written out in files.

Art work also promoted - turtle drawings etc.

CODE: (b)f(J85)1

SCHOOL (b)

DATE: 18/06/85

No. ON ROLL: 60, 3 teachers.

EQUIPMENT: 1 BBC + monitor + tape (no disk-drive, but v. much desired)

No. OF STAFF USING MICRO: 1

AGE OF PUPILS using computers: top juniors - 9, 10, 11 years.

WHAT SUBJECT AREAS? Maths, not specific. Logo only (since Easter).

SOFTWARE: MEP pack, Welsh versions, Primary Pen, Factfile, Quest, Dart, Logo.

Questions.

How much time do children spend on the computer?

About 20 mins per day (but flexible)

Children work with the computer in pairs - co-operation.

How is the distribution of computer time between classes arranged? Computer stays in top class.

CODE: (b)f(J85)2

Where is the computer housed? At the side of the top class.

Lots of children have home computers which they use for games mostly.

CODE: (b)f(J85)3

What do you/other teachers think of the software available?

Not much owned at the moment - just MEP packs - would like very

much to see software before buying.

How is the software that is used selected? What are the most important considerations? Wide age range important - small sch.

CODE: (b)f(J85)4

What in general do the pupils think of the computer?  
Generally enthusiastic, but now the computer is accepted as part of the class/school.

What does the computer add (if anything) to the school?  
Another tool.

Does using the computer in the classroom affect the teacher's teaching style? Logo - suits flexible/informal class where kids can get on on their own largely and follow their interests.

CODE: (b)f(J85)6

Comments.  
Headteacher has been working with Logo since shortly before Easter. He's doing an M.Ed. This got him interested in Logo. Worksheets are used - loosely - children work in pairs and are pretty much left to themselves - teacher "stands back" and adds help/introduces new ideas as needed.

CODE: (c)f(J85)1

SCHOOL (c) DATE: 19/06/85  
No. ON ROLL: 140  
EQUIPMENT: 1 BBC + monitor + tape.  
No. OF STAFF USING MICRO: All six.  
AGE OF PUPILS using computers: All children.  
WHAT SUBJECT AREAS? To back up work in class - e.g. today, 4th year Juniors - 24 hour clock, so time-telling program. This seemed very boring and too easy for them.

Questions.  
Children work at the computer on their own or in small groups depending on the program.

How is the distribution of the computer time between classes arranged? Approximately a day in each - rotating.

CODE: (c)f(J85)2

Where is the computer housed? Mobile between classrooms - on a trolley.

Within which areas is the computer utilized? Used to back up class work and maths work in particular, especially with the younger children.

Many children have home computers which are mostly used for games, and the odd tables and sums programs, and the odd one programs.

SOFTWARE: MEP tapes, and the Welsh versions.

CODE: (c)f(J85)3

The computer uses drill-and-practice (esp. maths) programs.

What do you/other teachers think of the software available? Some better than others.

How is the software that is used selected? What are the most important consideration? No time. Some programs are too easy - not stretching enough.

CODE: (c)f(J85)6

Comments.

Not a great deal being done with the computer, particularly with the Juniors (more with the younger children). Both Head and Deputy are sceptical and complain of lack of time to seek out good software. Not enthusiastic. The Headteacher dislikes the computer being used for its own sake.

I was v. surprised that the top Juniors used a time-telling program!

CODE (c)f(J85)7

Additional Comments.

Some time spent in all classes talking to the teachers. General uneasiness about my visit (particularly with the 4th Year Junior teacher) - thought that I was inspecting and judging rather than neutrally observing - of course I was judging as well, but my purpose was not to lay blame. I spent quite some time with the 4th year Juniors. They were, individually, working on what I thought to be a boring and easy time-telling program (from the MEP pack) - they had a few mins at the screen each, then someone else had a turn. One child described it as "babies' work" and

laughed and jeered at a

CODE (c)f(J85)8

child who got an answer wrong.

Also, apparently, each class had the computer for half-a-day per week, but when I asked some children how often they used the computer, they said it was the first time they had had it this term!

More inspiring work with the computer was done in the Infants - although I didn't see children at work with it, the teacher did seem more genuinely enthusiastic about it.

The Headteacher admitted that he didn't really see a great deal of point in using the computer. And this was from a teacher at a school which had been selected for its computer use!

Generally, disappointing at the Junior level - quite a depressing visit!

CODE: (d)f(J85)1

SCHOOL (d)

DATE: 26/06/85

No. ON ROLL: 272

EQUIPMENT: 1 BBC + monitor + tape.

No. OF STAFF USING MICRO: Mainly teachers of 3rd and 4th years.

AGE OF PUPILS using computers: Mainly 3rd and 4th year Juniors.

Questions.

Children work on the computer on their own and in small groups.

How is the distribution of computer time between classes arranged? Divided between the 3rd and 4th year Juniors, but also a resource room where children can use it in their own time - before school and in Break.

CODE: (d)f(J85)2

Within what areas of the curriculum is the computer utilized?

Used to back-up class work, or child-selected use.

Less than half the children have a computer at home (poor area).

Used mainly for games but some maths and spelling programs, and also data-handling. (One boy left a message for his Mum:

"Coffee on side - Press space bar for more info").

SOFTWARE: MEP pack, Welcome pack, Air Traffic Control, Factfile.

CODE: (d)f(J85)3

The computer uses drill-and-practice programs, simulations and data-base (Factfile).

How is the software that is used selected? What are the most important considerations? Often children select their own software, or it relates to class work. For children, programs need to be challenging - not too easy or boring. Also good graphics and instructions.

CODE: (d)f(J85)4

Software is rejected by the children if it is too easy or boring.

What, in general, do the pupils think of the computer?  
Stimulating (for slow learners too) - generally enthusiastic.  
But boys definately dominating.

What does the computer add (if anything) to the school?  
Another resource. Interest. Stimulating - a change from class work.

CODE: (d)f(J85)6

Comments.

On the surface, a lot of work with the computer. But my general feeling was that as the computer is there, it ought to be used - thought of as something of a chore/bind. Not really adding much to the lessons.

I spent time with the 4th year Junior class and what they seem to have been doing is work through the MEP and other programs - having a go at them, finding out what they like best, what's fun. Some of the boys had been compiling their own files (using Factfile) which they had typed into the computer, but they hadn't actually used the computer to handle data. I showed them that they could ask questions relating to data files (e.g. do the large dinosaurs tend to be meat-eaters or vegetarians) and use the computer to analyse the data. They were quite surprised at this use. So, once again, a generally disappointing visit.

CODE: (e)f(J85)1

SCHOOL (e)

DATE: 27/06/85

No. ON ROLL: 133

EQUIPMENT: 1 BBC + monitor + tape (no disk-drive - yet).

No. OF STAFF USING MICRO: All seven.

AGE OF PUPILS using computers: All

Questions.

Pupils work in small groups, 30 mins a session.

How is the distribution of the computer time between the classes arranged? A rota system - half-a-day a week in each class.

CODE: (e)f(J85)2

Where is the computer housed? Mobile between classrooms - on a trolley. But really want more computers (and disk-drives).

Within what areas of the curriculum is the computer utilized? Complementing maths work (in the top Juniors) mostly.

The children who have home computers use them mostly for games. But also there is a computer club in the Winter and Spring terms when the 9-11 year old pupils bring their own machines.

SOFTWARE: Doomsday, MEP pack, BASIC programming (interesting little programs - but in fact they were semi-copied from a book - and I don't really think the children understood how they worked.

CODE: (e)f(J85)3

What do you/other teachers think of the software available? Much rubbish - some good.

How is the software that is used selected? Complementary to the curriculum.

CODE: (e)f(J85)4

What in general do the pupils think of the computer? Interesting (though easy and repetitive stuff boring). They liked "Brick-up" - not for the learning - just for shooting down the wall.

CODE: (e)f(J85)6

Comments.

Once again, generally disappointing: the computer is used more usefully than at some other schools, but it's not being used to it's full potential. However, I've a feeling things may change at this school later - the Headteacher has only been there for two terms. But I didn't really have much time to quiz him.

Example of BASIC program "written" by pupil:

```
PRINT "8*9="
INPUT ANSWER
IF ANSWER = 72 THEN PRINT "CORRECT"
IF ANSWER <> 72 THEN PRINT "WRONG"
RUN
```

But the pupils didn't understand it - e.g. they didn't know what "<" or ">" meant!

CODE: (f)f(J85)1

SCHOOL (f) DATE: 01/07/85  
No. ON ROLL: 79  
EQUIPMENT: 1 BBC + monitor + tape + disk-drive (printer wanted)  
No. OF STAFF USING MICRO: 2 (out of 4).  
AGE OF PUPILS using computers: 7-11 (7-9 year olds mostly).

Questions.

Children work in small groups (not more than 4) for approximately 30 min sessions (but this does vary) in the 7 to 9 year olds class when using "Flowers of Crystal". The children never work on their own - groups aid discussion and co-operation. Also, if one wants to do X, s/he will have to justify it to the group.

How is the distribution of the computer time between classes arranged? The 2 Infants teachers are not interested in using it. It stays in the 1st and 2nd year Junior class unless the top Junior (3rd and 4th years) class teacher requests it.

CODE: (f)f(J85)2

Where is the computer housed? At the side of the 1st and 2nd year Junior class mostly. Not very mobile (although on trolley) because of split site.

Not many children have home computers. Those that do use it mostly for games.

SOFTWARE: MEP pack, "Flowers of Crystal" - an adventure game - fitted in with conservation project on alternative energy.

CODE: (f)f(J85)3

The computer uses simulation programs. Also programs are used if they fit in with project work - rather than as centre of project. The computer will be used for word processing if a printer is



bought.

What do you/other teachers think of the software available?  
Not enough good software out. Also problem of not seeing and reading about software before purchase: often not possible to do so.

How is the software that is used selected? What are the most important consideration? Not drill-and-practice programs - "they may be motivating at first, but enthusiasm soon wanes."

CODE: (f)f(J85)4

Does computer work affect other learning? The "Flowers Of Crystal" program stimulated much creative work.

What in general do the pupils think of the computer?  
They like the computer (though were apprehensive at first - thought it knew everything).

How does the computer help? Sometimes it can do things teachers can't - e.g. recorder tutor - displays notes.

CODE: (f)f(J85)6

Comments.

A worthwhile visit. The Headteacher is genuinely interested in computers and spends time working through software - she's got some very good work out of "Flowers of Crystal" and is interested in word processing if a printer is bought.  
The work in one class is v. good, however, as a school, the use of the computer isn't particularly noteworthy.

CODE: Mf(J85)1

Fieldnotes relating to a visit to a Manchester primary school on 08/07/85.

This school, in a poorer part of the city, is devoted to Logo (BASIC programs are not used at all). The Logo work is under the directive of one of the class teachers. Logo is used throughout the school, starting with the reception class. The reception class use the function keys (to move LT 45, RT 45, FD a number of steps, BK a number of steps, RT 90, LT 90 and walk a number of steps - indicated by two walking legs, and a final function key clears the screen). Because the function keys are used there is no reading or writing ability required. Even at this age the children are able to draw shapes. Also, if a scene (with

streets, bridges, rivers) is stuck to the screen (drawn on overhead paper) the

CODE: Mf(J85)2

children are able to drive the turtle from one place to another.

The top Juniors use sprites. The Logo teacher believes no Logo is complete without them. I'd tend to disagree - so much can and needs to be done without sprites.

Once again, this school is an example of good work produced with the computer as a result of one very enthusiastic, knowledgeable and interested teacher (he writes articles for journals on Logo). What the school would be like without him, I don't know. In fact he leaves at the end of the term to take up an adviser/co-ordinator's job for the county.

CODE: Mf(J85)3

The school had a lot of hardware, but some of it personally owned by the Logo teacher. He has also used the school to try out many different versions of Logo.

The school was also interesting from a language point of view. 40% of the pupils did not have English as their first language. A language adviser from Gwynedd also visited the school, together with Ben Mercy Headteacher. The former was especially interested in what Logo had to offer the development of language (so was the latter, but not so much). If a Welsh version of Logo was in most Welsh schools then it was thought that the children's group work and discussion whilst at the computer, would promote Welsh.

CODE: Mf(J85)4

As far as the county (of Manchester) was concerned, the LEA computer adviser told us that only about three schools used Logo, though several others were interested, and many more had "Dart" (out of about 207 schools). It suggests that Gwynedd as a county is fairly typical as only ~3 out of ~207 primary schools have and use Logo. Useful for comparison as Manchester and Gwynedd have approximately the same number of primary schools.

HEADLAND SCHOOL: CASE RECORD.

First Visit: June 1985.

CODE: Hf(J85)1

SCHOOL Headland DATE: 12/06/85  
No. ON ROLL: 200-250  
EQUIPMENT: 1 BBC + monitor + disk-drive.  
No. OF STAFF USING MICRO: All staff.  
AGE OF PUPILS using computers: All ages.

Questions.

Children work on the computer in small groups.  
How is the distribution of computer time between classes arranged? All classes have the computer for half-a-day per week.

CODE: Hf(J85)2

Where is the computer housed? Mobile between classrooms, on a trolley.  
The computer is used for language and maths programs mainly.  
Approximately two-thirds of the 4th years Juniors had a computer at home which they used mostly for games, but a little programming too.

SOFTWARE: MEP programs, Doomsday project.

CODE: Hf(J85)3

What do you/other teachers think of the software available?  
Fairly favourable.  
How is the software that is used selected? What are the most important considerations? Mistakes have been made by selecting software from catalogues - programs turned out to be too easy.  
The software the school has is not classified in any way.

CODE: Hf(J85)4

Software is rejected if it is "too easy".  
At what age should children start to use the computer?  
Deputy Head: the youngest use it, but 8+ most benefit.  
What in general do the pupils think of the computer?  
V. enthusiastic - like it better than working from text-books because of the instant feed-back.  
The computer is used to back-up class work, and as a "reward".

CODE Hf(J85)5

What value does the computer have for children? Does it aid their learning? Aids concentration.

CODE Hf(J85)6

Comments.

On the surface, a lot of use of the computer - all teachers making use of it. But in reality, I felt disappointed: I spent most of the time in the top Juniors and felt the use being made of the computer was uninspiring. At a guess, the teacher thought the computer was there so it ought to be used. But I don't think the children were getting a great deal from it.

Also the way the computer time was organized, one child (one in particular) could dominate the proceedings. The children were left fairly much to their own devices, and when bored,

CODE Hf(J85)7

or frustrated, the machine got turned off by one of the group, or another disruptive child.

Teachers expressed concern that there was no follow up at secondary school.

Also, the school would like more equipment.

CODE: Hf(J85)8

Overall Impressions. (From observation so far - not directly/solely relevant to Headland).

It is interesting that the "best" use of the computer comes from classes taught by a genuinely interested and enthusiastic teachers. However, one teacher does not make a whole school a "good" case.

It seems that a lot of schools (Heads) now that they have the computer, feel they ought to use it: so they work through the MEP programs - as a chore; timetable the computer so that every class gets it half a day a week - and feel they're getting somewhere! Basically, I don't think much can be gained from this. Far more can be accomplished by one interesting teacher who searches out some "good" software - even if it's just the one class that gets the benefit of this - the overall benefit of the computer is greater than the benefit gained from all the timetabling and laborious working through of dull programs.

From Fieldnotes.

CODE: Hf1

DATE: Friday 15th November 1985

Just had an interesting conversation with the Deputy Head on the phone - reading between the lines, I don't think a great deal goes on - Wednesdays the best day for them (but unfortunately not for me). I'll go in next Wednesday morning and take it from there. He was friendly and emphasized being flexible and talked of Christmas nearing, implying that it wouldn't be worth visiting then. Also, he was, I think, a bit worried that I might be judging the teachers in some way - said that they're not exactly.... experts. I expect he wonders why I've picked his school.

CODE: Hf2

DATE: Wednesday 20th November 1985

This school is about .. miles from Bangor and situated on the outskirts of ..... I arrived in the morning - shortly before 9.30 am. Ms.J2 greeted me and we chatted for a few mins in the Headteacher's room until assembly was over. She told me her class (2nd year Juniors) would be using the computer for the morning. She was welcoming but also quite interested to know why I'd chosen Headland school - she thought it might be because it was an "open-planned" school. I told her that I wanted to study a school that used the micro in a more usual way - I explained that the other two schools I was studying were doing special/ different things and either had, or expected more equipment. I wanted a school that only had the one computer and therefore had to face the various problems of the one machine in a big school (approx 197 + nursery group = 210+). I wanted them to see some reason for my choosing their school. Ms.J2 also spoke of the lack of guidance teachers had had with computers (two members of staff had been

CODE: Hf3

on a course - not enough - and Ms.J2 had been learning programming at evening classes). She also complained of the lack of follow-on at secondary school where the pupils don't meet computers again until the 3rd year.

The school has one BBC, one monitor and one disk-drive, all on a trolley. The computer is timetabled across the classrooms, currently like this:-

	Morning	Afternoon
Monday		3rd Year Juniors
Tuesday	4th Year Juniors	
Wednesday	2nd Year Juniors	1st Year Juniors
Thursday		
Friday	Infant I	Infants II

The school has a deaf boy who uses the machine sometimes on a Thursday - that might be interesting to see.

Software: MEP introductory programs. Some other software. I asked if there were any programs Ms.J2 particularly liked but she said at the moment she was just working through those they'd got.

CODE: Hf4

The school seems busy and lively. Ms.J2 has the computer on a Wednesday morning because J4 go swimming so there's more room for the computer. Today it was in Ms.J2's area (open-planned school) for the first 10 mins until the other group had gone, and then it moved into that area.

After assembly, I went with Ms.J2 to her class and she spoke briefly with all of them telling them they'd be taking turns and working at the computer which would give them a tables test. The class is large - 34 - and noisy and not that good apparently.

I sat at the computer and the children came up in pairs (ability pairs - they are grouped by ability and they came up with the person that sat next to them). The program was called "Tables". Basically what the children did was a 20-questioned test, which gave them 10 seconds to answer each question. They wrote their names and the number of right and wrong answers they got on a piece of paper - which the teacher saw at the end. Highest score was 14, lowest 5. This program was used because it was thought to reinforce the work the children had done on tables (apparently they were up to their nine-times-table).

After the first group, there was a slight hic-up - the program gave remedial instruction

CODE: Hf5

- in this case it said at the end of the test the tables which needed practising and set out more questions in those tables. When the second group arrived, they ended up doing the remedial work of the previous group. However, this was sorted out afterwards by pressing escape and selecting the test again. The teacher thought the remedial work could be useful but explained that there was simply not enough time.

All the time up to Break and most of the time after was spent with groups of 2 doing the test - each of the two took it in turns to answer a question.

The kids seemed to think hard for the answers - some simply did not know their tables - for those who did not, I can't really see how the test alone would help them. Also, another criticism - the whole idea of racing against time. Also, if the answer was typed in and the return button pressed just as the next question appeared, the machine would take the return as meaning no answer for that question, and go on to the next.

During Break, talked about timetabling and the best time to visit. Also, practice for the Christmas play will be coming up soon which will disrupt normal lessons.

The acting Head said "hello", but generally showed little interest in me - he is the chap

CODE Hf6

whose class I spent most time in last time I visited - along with Ms.J2's class.

When all the pupils had had a go at the test (the rest of the class carried on with their normal work) I spent the remaining time looking at a few of the programs:-

"Crash": directing arrow around obstacles.

"Frac": drill-and-practice fractions program.

"Gates": logical gates - a sorting program - Ms.J2 suggested I look at this program as she can't figure it out (no documentation). Basically it sorted/categorized objects.

Other Points.

As an open-planned school I thought they'd use adventure games and the like, but they don't.

The kids seem to know about loading and the like (\*cat, chain"  
etc)

Quite a lot of "rough and ready" kids at the school.

I was invited by Ms.J2 to try any experiments with the children and the computer if I wished.

It was the first time the kids had tried this tables program.

I counted 13 girls and 19 boys in the class today. Only one first language Welsh speaking child.

CODE: Hf7

Reflections.

The difference between this school and Ben Mercy and Longsight is quite remarkable - though obviously I can't tell after just one morning's visit. I don't like to say it, but the kids don't generally appear to come from such good homes, but not that that would account for the difference in computer use.

This is an interesting school - if you read some "facts" about it you might think that interesting things were going on with the computer - e.g.- selected by D. Price (last term).

- owning a disk-drive.
- wanting more equipment.
- open-plan (progressive setting, but kids learning tables and using drill-and-practice programs).

I wonder why just the drill programs are being used - first I must be sure that this is true. I don't think I can/should make any more judgements at this point.

DATE: Tuesday 26th November 1985

Message awaiting me - Headland school will be closed tomorrow when I'd planned to visit. I rang and arranged to go in on Wednesday 4th December. The Deputy Head seem quite apologetic.

CODE: Hf8

DATE: Wednesday 4th December 1985

Arrived at 9.30am. Waited for 5-10 mins - sat in Headteacher's office as assembly was still in progress. Ms.J2 came along and I went with her to her class. Today the computer was used to administer a spelling test. Ms.J2 asked if I would type in the test - she'd tried to save it on disk but wasn't able to.



The program: "Starspell" - using own list of words:

WOMEN    CHANGE    COLOUR    JESUS    ORANGE    CLOTHES    THINK    CLIMB  
BREATHE    WEATHER

CODE: Hf9

The target time to beat is five-and-a-half mins. The word appears on the screen first - the pupils looks at it, it disappears, and the pupils type in the spelling and press return. If the word is spelt incorrectly the pupils are shown the correct spelling - re-organization of letters: some in the "waste bin" and addition of others.

The pupils come to the computer in groups of two. They take it in turns to spell the word. They decide who should go first. I briefly explain what they have to do. I record their names, the time taken and the number they get right first go.

The rest of the class are writing.

No apparent sign of pressure of time - unlike the tables tester. The computer does not indicate until the end the amount of time that has been used.

Results.

NAME	TIME	No. RIGHT 1st TIME
Ali & Tra	2.5	10
Lyn & Joa	3.5	10
Joh & Kar	3	10
Pau & Sun	3	10
Rac & Cha	2.5	10
Nei & Gav	4.5	8 women orange
Mar & Dav	6.5	9 women
Mar & Sue	5.5	6 women Jesus climb weather
Ala	7	5 women colour orange clothes breathe
Ger & Lee	4	9 breathe
Van & Ber	3	9 colour

Dar & Emm	15	1 all except colour
Ang & Dav	4	8 clothes weather
Kev & Dav	9.5	5 change orange clothes breathe__weather__

CODE: Hf10

Points.

Nei & Gav - Gav made the point of telling me that Nei had got the two wrong - it wasn't him.

Most of the groups worked well together - one giving the spelling if the other didn't know. They hadn't been tested on these words before, but some of these words apparently appeared in some of their word books.

Ber was very quick on the keyboard - and a good speller - though he got told off for not working in class.

Most expressed relief when the word was right - expressed by a sigh.

Several wanted to know how others had done and if they were the best - I didn't tell them exactly as two factors were involved - number right and time.

All the pupils knew about pressing the return key and using the delete key.

CODE: Hf11

During Break several (~3-4) were having another go and they wanted to stay in but the computer was switched off and they were sent out.

After Break I had to type in the list again, then more groups had their go.

Dar & Emm: only one word right the first time and they needed several goes at each word - they didn't seem to learn by their mistakes - i.e. their fourth attempt might be the same as their first.

Two things I didn't like: If word was spelt incorrectly, then re-ordering of letters was not always clear - e.g.

WEARTHER ----- last R in the waste bin

WEARTHE ----- only gives WEA as in correct position

...RTHE ----- these re-ordered, giving WEATHER

It would have been less confusing if the first R had been put in the waste bin, as the other was in the right place.

Also, at the end of the test, all the words that were not spelt correctly the first time are listed, and where there are more words then will fit on a single line, the word at the end is split - e.g.

W O M E N   C H A N G E   J E S U S   O R A N G E   C L O T H E S   T  
H I N K   C L I M B   B R E A T H E   W E A T H E R

CODE: Hf12

Also, the last group didn't actually finish, and one group didn't have a go at all - because Lunch time was approaching. Ms.J2 said that it didn't matter and they could go first next time. (I wonder when that next time will be!).

She said she hadn't used the program before.

Also, at the end I offered to lend her software - if she told me what she wanted I'd see if I could get hold of it. She said she didn't know what might be worth having and said if I wanted to use anything else, I could.

The morning events were really pretty boring - but this use of the computer probably does happen in a lot of classrooms (unfortunately). I really wonder what the children learnt: how to spell the odd word or two - only if they couldn't spell them in the first place. But Ms.J2 does seem pretty keen on testing the basics.

During the morning Ms.J2 said it would not be worth visiting again this term as there'd be Christmas concerts and rehearsals and parties etc. I don't think this was untrue - the Break time was taken up discussing Christmas events for the children - I think a

CODE: Hf13

lot is done - but I felt she might be quite glad I wouldn't be in for a while - I feel she probably has to think how to give me something to see. She does ask if I'm okay.

I don't yet have much to do with the Deputy/Acting Head - I ask how the Head is - he might be back next term.

I shall ring during the first week of next term to arrange a visit - this time I'd like to see another class. I feel it will take time for them to get accustomed to my presence, and carry on (with the computer) as normal.

CODE: Hf14

DATE: Tuesday 7th January 1986

I phoned the school at about 11am and spoke to the Deputy/Acting Head. I asked him about visiting again, starting next week - he replied "smashing". I asked if I could spend some time with the Top Juniors (Standard 4) - he said that'd be difficult on a Wednesday morning - they were timetabled for the computer on Tuesday mornings - it's fine to visit then. He said something about when J4 visit the sports hall so I must check when I visit. Also he said that the Headteacher may be back then, though he's still off ill.

CODE: Hf15

DATE: Tuesday 14th January 1986

I arrived shortly before 9.30am. Assembly was just coming to an end. The Deputy/Acting (D/A) Head greeted me and lead me through to the J4 classroom (or rather, area). I was introduced to the teacher who's taking the class whilst the Deputy is Acting Head. She asked if I could wait a few mins while she got things started. The D/A Head then introduced me to Mrs. P. who was looking through some programs at the computer. She works with the deaf boy (last year there were four deaf pupils). She was looking through the programs to see if there were any she thought suitable for him - he'd worked on the "Map" program and liked that. Indirectly, she asked if I had any programs to lend - I said I'd see what I could do. She ran through the "Map" program to show me what it was like: basically it consists of directing a cursor about the screen, over a map of GB, in order to locate cities. The result was a possible 10/10 for accuracy, but this is very hard to achieve - you have to be spot-on - just a fraction out reduces the accuracy score - and it is possible to be very close but score zero.

She talked about "Hopper" and said that the kids liked that, and sarcastically, that it was very educational! Then she departed and the first

CODE: Hf16

group of children arrived to work through the "Map" program. And through-out the morning I saw all the children.

Generally: None of the pupils had used the "Map" program before. I said very little about it as it was pretty self-explanatory. Several times I asked what they liked doing with the computer and everytime they say "Hopper" (I haven't actually seen this program - but I've seen "Frogger" which is apparently like it - getting a frog across a river by jumping it onto logs etc - it's a game).

I also asked what they thought of the "Map" program and they said it was "good but not easy". Most groups were reluctant to leave - they wanted another go.

First Group: 3 boys A, R & J  
They run through it quickly - 10 places to locate.  
Their general reaction is that it's "quite hard". They start on their next go and when they see I'm writing down what happens, one says "it's a test", then "we won't do very well, we're no good at geography". Then one asks if there is a time limit - they're very pleased when I say there isn't. That's interesting: a comment on timed drill programs, which, judging from my observations of J2, they've

CODE: Hf17

had considerable experience of. And they're glad it's not timed - I could virtually see them physically relax.

They had something to say about the accuracy scores - e.g. "but that's not fair. We were very near" - a reaction to a zero score. The program doesn't distinguish between a near miss and something way off.

Also, these three, as a group, were dominated slightly by one - another one made sure he got his fair turn and also said of the third "give him a go".

These are their "results":

Scarborough	0	Southampton	4	Scarborough	0
Swansea	3	Edinburgh	0	Luton	2
Newcastle	1	Holyhead	10	Ipswich	0
Leeds	1	Lincoln	0	Manchester	2
Cardiff	5	Winchester	0	Sheffield	2
Hull	0	Inverness	0	Winchester	0
London	0	Truro	1	London	0
Manchester	2	Scarborough	0	Inverness	0
Peterhead	0	Dundee	0	Leeds	0
Winchester	0	Ipswich	0	Truro	4
TOTALS	12%		15%		10%

Canterbury	0	
Scarborough	1	
Bristol	0	Escape button was pressed, so I had
Swansea	4	to re-load the program - with plenty
Peterhead	0	of help - they seemed to know how to
Winchester	0	load (CHAIN "MAP").
Exeter	6	
Inverness	7	
Manchester	7	
Edinburgh	0	
	25%	

CODE: Hf18

General Note: I did help locate some of the places, or gave clues - especially for the cities in the South West. Also I asked about where the borders between England, Wales and Scotland roughly were.

Also, an atlas was placed by the computer which I failed to mention. One group spotted it and it was used there after. Some groups had considerable difficulty relating the map in the text book to the outline of GB on the screen - the text book map was larger and most of Scotland was on another page. But some seemed to have no trouble at all. So the use of this program, as well as quite obviously increasing the children's knowledge of the location of selected cities (after pressing return, when the children have decided where they think the place is, a yellow blob shows where it actually is situated) - though interestingly, even after a particular city has been located for a third time, the children were sometimes quite far off. This program also did something to promote their map-to-map relation skills.

Several of the pupils said they knew where places were, but in fact were only familiar with the name (from following football) rather than the actual location.

CODE: Hf19

Second Group: 3 girls.

They worked well together - co-operation - lots of discussion, and turn taking - fair to each other. Half way through, they spot the atlas and use that - they ask if they can and I say "yes" - an intelligent thing to do really. But some of the places are not marked on the text-book map.

After two goes, they ask if they can have another go, and as there isn't another group waiting, I say they can - they seem well pleased.

Their "results":

Canterbury	0	Dundee	0	Cardiff	5
Edinburgh	1	Luton	5	Plymouth	3
Swansea	7	London	0	Leeds	8
Lincoln	0	Grimsby	0	Peterborough	4
Leeds	0	holyhead	10	Glasgow	0
Manchester	0	Edinburgh	0	York	4
Bristol	0	Leeds	4*	Bristol	6
Liverpool	10	Winchester	0	Edinburgh	8
Aberdeen	6	Torquay	7	London	8
Peterhead	0	Southampton	6	Swansea	7
TOTALS	24%		32%		53%

(\* indicates start of atlas use - Winchester not marked)

This group used all their resources and made sensible guesses - e.g. Luton - somewhere near London. They also, though, looked to me and asked if it was right before pressing return - I said they must decide.

CODE: Hf20

Third Group: 3 girls: E, E & S.

This group made use of the atlas but were not very good at relating it to the outline on the screen. This is reflected in their scores:

Peterhead	0
Manchester	0
Grimsby	0
Plymouth	0
Exeter	0
Holyhead	10
Carlisle	0
Liverpool	4
Truro	7 (some help)
Leeds	0
TOTAL	21%

The D/A Head joins me at this point and has a chat. He says several things: they seem to have worked through most of the programs. He believes that if the pupils selected the programs they'd chose games (like "Hopper") or easy programs - programs (presumably drill-and-practice) that they'd gone over and knew all the answers. He complained about the lack of follow-on with computers at secondary school, where they don't see it for the first few years - and with the Industrial Action the kids don't even have the opportunity to join computer clubs. He asked if I could write programs - I said "no" and that I didn't think it was

essential. He talked about

CODE: Hf21

a boy who was at the school last year and who was really good - way above anyone else (including the teachers). But now he's at the secondary school he doesn't see computers.

He also said that on a Thursday afternoon he takes the reception class and runs through programs with them. He spoke of the younger children's complete acceptance of the existence of computers. He also gave an example in which the computer program made the work much more meaningful: he spoke of the difference between writing  $2 + 5$ , and having it shown on the screen where the 5 actually appears. I'm not sure I could agree that such a program could make things more meaningful. But I can't really judge as I haven't seen the children or the program.

Fourth Group: 2 girls: B & M and 1 girl, S joins at the end. This group used the atlas but really couldn't relate the map to the screen, even when I intervened and related the curve around East Anglia on the map, to the outline on the screen. B & M found it hard to follow.

Their Results:

CODE: Hf22

Scarborough	0	Peterhead	0
Plymouth	8	Peterborough	6
London	0	Leeds	2
Peterhead	0	Sheffield	8
Manchester	0	Hereford	0
Exeter	0	Hull	0
Edinburgh	2	London	0
Luton	0	Ipswich	5
Inverness	0	Scarborough	0
Canterbury	0	Swansea	6
TOTALS:	10%		27%

Fifth Group: 2 boys: L & A

This group was quite impressive really. They made intelligent guesses - e.g. Winchester (not marked on the atlas) - "likely to be in England, because it sounds a posh area - probably near London, in Kent. Also, it's not a port, so it's not on the coast".

They also asked if there was a time limit and said "Oh good" when they learned there wasn't. They took their time and thought carefully. They didn't always get the locations right, but they made intelligent guesses.



"Results":

Scarborough	0
Newcastle	7
Leeds	0
Cardiff	7
Hull	3
London	3
Manchester	1
Peterhead	0
Winchester	0
Southampton	6
TOTAL:	27%

CODE: Hf23

Sixth Group: 2 boys: G & S.  
 Another pair who couldn't relate well to the map in the atlas and the outline on the screen.

"Results":

Edinburgh	0
Holyhead	7
Lincoln	0
Grimsby	3
Winchester	0
Inverness	8
Truro	0
Scarborough	0
Dundee	0
Luton	0
TOTAL:	18%

Seventh Group: 3 boys: C, S & A.  
 A good group who use the map well. They play fair and take turns. They try hard to get the locations right.

"Results".

Luton	2
Ispwich	5
Manchester	2
Sheffield	7
Winchester	0
Scarborough	0
London	6
Inverness	2
Leeds	1
Truro	8
TOTAL	33%

CODE: Hf24

Eighth Group: 3 boys: R, K & L, and one boy, M joins later. They're quite a lively bunch, but have problems relating the map to the screen.

"Results".

Peterhead	0
Canterbury	4
Scarborough	0
Bristol	3
Swansea	1
Winchester	0
Exeter	0
Inverness	0
Manchester	0
Edinburgh	0
TOTAL	18%

The bell goes at 12 noon whilst the above group are having their turn. They want to stay longer and the class teacher asked if M. could have a go as he hadn't yet. I stay another 10 mins. They kept on wanting "one last go"! I was quite surprised - I thought they'd much rather want to play outside.

CODE: Hf25

Teacher's Role: The teacher for the most part carried on, I presume, as usual - the only thing she did was to send groups of pupils to the computer. I anticipate that she'd do the same if I wasn't there.

Whilst the children located places on the map, I made a list of the school's programs.

Other Comments/Observations.

Approximately 22 - 26 in the class.

I thought that what I saw going on this morning with the computer was an improvement on the activity I observed on my two previous visits. However, basically this "Map" program is a drill program, but there is more scope for discussion within the group. But, although the program was better, little or no thought was given to integrating the work into the curriculum.

I am surprised that most of the children know how to load programs and seem confident with the machine when all they appear to do is run through drill-and-practice programs.

I also noticed that the girls were generally more passive, ready to please and eager to be right than the boys who gave the impression of caring less - but this is only a general feeling.

CODE: Hf26

DATE: Tuesday 21st January 1986

I arrived at 9.30 and spoke briefly with the D/A Head whilst he wheeled the computer on the trolley from its night storage lock-away cupboard to a cloak room area just off the J4 class area - as it was last week. The school is open-planned and the computer can be seen from the class. I told him that I'd brought some programs (ASK - basically instructional programs with good graphics) for the school to borrow (to show appreciation and help aid relations). He seemed pleased. (Generally he seems to be in some kind of hectic rush - gives the impression that he's got so much to do).

I spoke with him again that morning - he came to see if everything was okay. But one of the children's parents interrupted us so talk was brief. He said that Ms.J2 would probably be most interested in the programs (passing the buck?).

General Comment: The J4 class do not use programs to reinforce or complement what goes on in lessons - as happened in Ms.J2's class. Rather, J4 pupils just work through the programs.

I had no contact with the class teacher (but she is temporary while Deputy is Acting Head).

Generally I find it is becoming increasingly

CODE: Hf27

easy to visit the school - they appear to have got used to my visits and hopely don't see me as any kind of threat. Also I've got used to visiting. The children certainly aren't backwards in coming forward. One boy and one girl on separate occasions asked about what I was doing. The girl wondered why I kept a note of their work - I said I was interested in what they did, though "marks" weren't important. I didn't really satisfy her questions though. The boy asked if I was at the university and said his Dad worked there too.

Today's program was called "Story". All the children in the class had a go at it.

Basically it is a comprehension/memory program - a few sentences appear on the screen (until the group press return) and then follow 9 questions relating to the story. All the "stories" have the same format:-

IT WAS A ..... DAY IN ..... . ..... LOOKED OVER THE  
..... . A ..... WAS IN THE FIELD BY THE  
..... TREE AND A ..... WAS ON THE ..... GATE.

The blanks vary. The questions are always the same:-

CODE: Hf28

- (1) Who was looking?
- (2) What was .... looking over?
- (3) What month was it?
- (4) What kind of day was it?
- (5) What animal was in the field?
- (6) What colour was the .... ?
- (7) What kind of tree was it?
- (8) What colour was the gate?
- (9) What kind of bird was on the gate?

First Group: 3 girls: B, S & M.

Answers:

- |                      |                                      |
|----------------------|--------------------------------------|
| (1) Susan            |                                      |
| (2) Ditch - misspelt |                                      |
| (3) March            | I didn't record their first couple   |
| (4) clear            | of goes - I'd never seen the program |
| (5) dog              | before.                              |
| (6) brown            |                                      |
| (7) oak              |                                      |
| (8) red              |                                      |
| (9) starling         |                                      |

TOTAL: 9/10

Criticism of the program:

Although some words are misspelt because the group/individual can't actually spell the word, others are typing errors - but the delete key cannot be used. The children found this frustrating. In addition, in answer to a question like (5) the response might be the name of the animal and its colour (e.g. brown dog) - the program takes this as a wrong answer. (Also, the space bar is inactivated).

The program made a fairly negative "boom" noise when the answer was right which lead some children

CODE: Hf29

to ask me if there answer was right. No scores were given. If the answer is wrong, the correct word appears in blue. Finally there is a last chance to look at the prose again, before another appears (when return is pressed - that's if another is there - at the beginning 1 to 9 stories can be chosen. If 1 is chosen, after the first the program must be chained again. Therefore, the next time I chose 9, but even then, after 9 I had to chain the program again). The program definately had some design faults - also there were no graphics - such an exercise could have taken place without a computer. However...

Also, none of the children had used this program before.

Second Group: 2 girls, 1 boy: E, E, & A.

Answers:

(1) Tom	(1) Sarah (wrong)
(2) Hedge (misspelt)	(2) ditch
(3) May	(3) July
(4) clear	(4) Cloudy
(5) pig	(5) cow
(6) black	(6) grey
(7) apple	(7) oak
(8) red	(8) red
(9) rook	(9) rook
TOTAL: 8/9	TOTAL: 8/9

As the third prose appears, A. comments:-

"you remember the pink gate, and you remember the black cow and I'll remember the bright May".

CODE: Hf30

Shows planning, co-operation and strategy.

Answers:

(1) Sarah	(1) Sarah	(1) Brian
(2) fence	(2) ditch	(2) ditch
(3) May	(3) July	(3) April (misspelt)
(4) bright	(4) wet	(4) bright
(5) cow	(5) donkey (misspelt)	(5) pig
(6) black	(6) white	(6) black
(7) fir	(7) fir	(7) beech
(8) pink	(8) orange	(8) blue
(9) thrush	(9) chicken	(9) chicken
TOTAL: 9/9	TOTAL: 8/9	TOTAL: 8/9

However, A. soon comments "what kind of game is this? It's boring".

I ask them what they think of the program - A. says it's boring but "better than some".

Other comments:

A: "This is a weird game".

E: "It's quite good though".

Comments:

It's much more a memory than a comprehension exercise.

It becomes quite clear that the brighter kids don't find it at all challenging - and several find it boring. Yet they keep wanting to have another go - to escape their class work?

CODE: Hf31

Third Group: 3 boys: R, S & J.

I explain what they have to do.

(J and R - obviously - well so it seems to me - "bad" boys - cheery, but swear a lot - "Oh shit" etc. But they show interest in this and think hard and carefully. With the first prose, J says:- "each one get a sentence in our mind" - division of labour again - initiative and co-operation.

Answers:

(1) Sarah	(1) Sah (wrong)	(1) Brian
(2) ditch	(2) fence	(2) hedge
(3) May	(3) July	(3) May
(4) sunny	(4) dull	(4) bright
(5) doneky	(5) hon (wrong)	(5) bl (wrong)
(6) black	(6) black	(6) black
(7) apple	(7) fir	(7) oak
(8) pink	(8) yellow	(8) blue
(9) thrush	(9) crow	(9) sparrow
TOTAL: 9/9	TOTAL: 7/9	TOTAL: 8/9

J says to R at one point: "don't spoil it for the rest of us".

All these boys are very rough and ready but try hard at this.

They also ask if I'll be coming every week - I say for a few weeks - and they're pleased.

I ask them what they think of this program:

R: "rubbish"

S: "Not as good as last week's"

J: "It's okay".

I think S's and J's lukewarm appraisal was influenced by R's condemnation.

CODE: Hf32

Fourth Group: 2 boys: S & L.

The previous group made comments about these boys' lack of ability.

Note: The class teacher roughly gives each group of children 10 mins at the computer. She decides when to send the next group. Actually some groups got quite a lot longer than other groups.

Answers:

(1) Brian	(1) Brian
(2) Wall	(2) Wall
(3) June	(3) May
(4) sunny	(4) wet
(5) pig	(5) donkey
(6) brown	(6) black
(7) ash	(7) ash
(8) blue	(8) green
(9) chicken	(9) duck
TOTAL: 9/9	TOTAL: 9/9

This group's ability was fairly well suited to the program - they got them all right but it wasn't easy for them.

I ask them what they think of the program: "smart".

CODE: Hf33

Fifth Group: 3 boys: K, G & A.  
G dominates this group.

Answers:

(1) Brian	(1) Susan	(1) Tom
(2) fence	(2) wall	(2) hedge
(3) March	(3) March	(3) May
(4) cloudd (wrong)	(4) bright	(4) cloudy
(5) hourse (wrong)	(5) dog	(5) cow
(6) grey	(6) brown	(6) brown
(7) elm	(7) apple	(7) ash
(8) yellow	(8) pink	(8) blue
(9) crow	(9) starling	(9) heron
TOTAL: 7/9	TOTAL: 9/9	TOTAL: 9/9

I ask what they think of this:-

G: "okay"

K: "It's good"

G is the only one of this group who liked the "Map" program better than this - he found this too easy.

Sixth Group: 3 girls: K, P & K. (10++ mins)  
Bright, well-behaved girls who try hard - my impression.

Answers:

(1) John  
(2) wall  
(3) July  
(4) bright  
(5) donkey  
(6) grey  
(7) ash  
(8) blue  
(9) starling  
TOTAL: 9/9

The bell rings - I ask if they'd like another go - they definately do. But the class teacher comes and tells them they can continue after Break.

CODE: Hf34

Sixth Group continued:

Answers:

(1) John	(1) Susan	(1) Tom
(2) wall	(2) ditch	(2) hedge
(3) July	(3) March	(3) May
(4) bright (wrong)	(4) clear	(4) clear
(5) donkey	(5) dog	(5) pig
(6) grey	(6) brown	(6) bls (wrong)
(7) ash	(7) oak	(7) apple
(8) red	(8) red	(8) green (wrong)
(9) duck	(9) starling	(9) starling (wrg)
TOTAL 8/9	TOTAL 9/9	TOTAL 6/9

(1) Sarah	(1) Sarah	(1) Sarah
(2) fence (wrong)	(2) fence (wrong)	(2) ditch
(3) July	(3) May	(3) July
(4) cloudy	(4) bright	(4) wet
(5) cow	(5) cow	(5) donkey
(6) grey	(6) black	(6) white
(7) apple (wrong)	(7) fir	(7) fir
(8) red	(8) pink	(8) orange
(9) rook	(9) thrush	(9) chicken
TOTAL 7/9	TOTAL 8/9	TOTAL 9/9

(1) Brian	(1) Sarah	(1) Sarah
(2) ditch	(2) ditch	(2) fence
(3) April	(3) May	(3) July
(4) bright	(4) bright (wrong)	(4) dull
(5) pig	(5) cow (wrong)	(5) horse
(6) black	(6) grey (wrong)	(6) bl (wrong)
(7) beech	(7) apple	(7) fir
(8) blue	(8) orange (wrong)	(8) yellow
(9) chicken	(9) hicken (wrong)	(9) crow
TOTAL: 9/9	TOTAL: 4/9	TOTAL: 8/9

I ask what they think of the program:

"boring", "easy", "the 'Map' was much better".



As a result, I say that I'll give them less time to look at the prose (by pressing return). They find it much too easy otherwise - this explains some of the drops in marks. The prose is only on the screen for a few seconds.

CODE: Hf35

Seventh Group: 3 boys: C, L & A. Answers:

(1) Brian	(1) Brian (wrong)	(1) Brian
(2) hedge	(2) wall	(2) wall
(3) May	(3) June	(3) June (wrong)
(4) bright	(4) sunny	(4) wet
(5) horse	(5) pig	(5) donkey
(6) black	(6) pink (wrong)	(6) black
(7) oak	(7) ash	(7) ash
(8) blue	(8) blue	(8) green
(9) sparo (wrong)	(9) chicken	(9) hen (wrong)
TOTAL: 8/9	TOTAL: 7/9	TOTAL: 7/9

(1) Susan	(1) Brian	(1) Tom
(2) wall	(2) fence	(2) hedge
(3) March	(3) March	(3) May
(4) wet (wrong)	(4) cloudy	(4) cloudy
(5) dog	(5) horse	(5) cow
(6) brown	(6) grey	(6) brown
(7) apple	(7) elm	(7) ash
(8) pink	(8) yellow	(8) yellow (wrg)
(9) starling	(9) crow	(9) heron
TOTAL: 8/9	TOTAL: 9/9	TOTAL: 8/9

They're really pleased: "brilliant".

C: "I think the Map's best".

L & A: "I like this best. It's best of all".

CODE: Hf36

Eighth Group: 2 boys: M & D.

The final group - slow - particularly D. - can't spell - but does try. Part way through one of the boys from another group joins and helps the others somewhat (L. from group seven, joins to listen and help during the second go).

Answers:

(1) Jonh (wrong)	(1) Sarah	(1) John
(2) wall	(2) wall	(2) feh (wrong)
(3) June (wrong)	(3) May	(3) April
(4) bright	(4) brighth (wrong)	(4) clear
(5) donkey	(5) dog	(5) pig
(6) grae (wrong)	(6) brown	(6) grey
(7) hasl (wrong)	(7) oak	(7) fir
(8) bluw (wrong)	(8) orange	(8) pink
(9) swallow (wrong)	(9) starling	(9) rook
TOTAL: 3/9	TOTAL: 8/9	TOTAL: 8/9

(1) Sarah	(1) Susan
(2) wall	(2) hedge
(3) July	(3) June
(4) sunny	(4) dull
(5) horse	(5) pig
(6) grey	(6) black
(7) beech	(7) oak
(8) red	(8) pink
(9) crow	(9) swallow
TOTAL: 9/9	TOTAL: 9/9

CODE: Hf37

M: "It's good this, but not as good as 'Map'".

Comments.

Basically that program was far too easy and dull for most of the pupils in J4.

I think the kids are getting to like me. They are a mixed bunch - some bright and co-operative, others little bully-boys, others of really low ability, others rough and ready and cheeky. It's probably a hard class to handle, but when they only come in groups of 2 or 3 it's fine.

I get the impression that generally the computer isn't being utilized in any clearly thought-out manner.

The program I lent - nothing too exciting - I didn't want to over influence this case study school by lending something like "Granny's Garden".

CODE: Hf38

DATE: Tuesday 28th January 1986

I arrived shortly before 9.30am. Assembly is just finishing and in the hallway is the computer set-up on the trolley and a young boy (D.B.H.) is checking and sorting the programs. I discovered later that he is in the 1st year at secondary school and regularly returns to his primary school - when the sec. sch. is on strike - as this morning - for example. I did meet him when I visited the school last Summer - apparently he's something of a computer whizz.

He complained that the disks weren't looked after properly: "children step on them". He was checking up to make sure they were running properly. He also had a game of "Hopper" and got a very high score.

I was with him for about 10 mins before the D/A Head met me. I helped him move the computer to the J4 area. A few problems with

plug sockets - yesterday a circuit had blown. We had to move the computer to a raised carpeted area off J4 area instead of putting the computer in the usual cloak room area off J4. Actually he said that this was the usual place for the computer in J4 area. He suggested that I should try out the ASK programs (on loan to the school) with the children. I agreed - although I had only had a brief look at them before. I was somewhat concerned about which software to lend the school because I didn't want to influence their use of the computer. However, I think that this set of 5 programs does fit in with their other programs (largely instructional) except that the graphics are of better quality and more exciting.

CODE: Hf39

I had thought about giving the attitude scale to the J3 and J4 classes but this request was sprung on me by the D/A Head and it was difficult to refuse. Being realistic, I expect that I shall be obliged to use another of the programs next week so I shall be unable to do the attitude scale until after half-term.

Without much thought (or advice from others) I decided to try out the program called "Number Chaser".

No taping as discussion wasn't very interesting - just deciding which of 4 numbers was the nearest to the answer.

Notes From Program Documentation:

"Number Chaser" (ASK). (By D. Walton)

"Number Chaser" is designed to develop skills of estimation.

The game is a race between the player's vehicle and an opponent's vehicle (which pursues the former). In fact both vehicles are controlled by the player's performance: enough correct answers and the player wins the race; too many wrong answers and the vehicle behind crashes into the vehicle in front.

When you have loaded "Number Chaser", the program will start by asking you to choose what sort of vehicle you want to race with. The bicycle will give you the easiest problems and the racing car will give you the hardest.

The screen shows a four lane race track. There are two vehicles on the track, one behind the other. The space bar symbol appears. Press it and you see a multiplication sum at the top of the screen. Just below it are four numbers, one above each lane on the race track. These are the choices you've got as possible answers to the sum. None of them is exact, but one is closer than the rest. Estimate the answer and decide which of the four numbers is closest to it, then move the vehicle into that lane, by using the Z and X keys. The other vehicle follows.

After a pause, the correct answer will flash. If you have selected the nearest answer, the speed of your vehicle will increase and you will get further ahead of the other vehicle. Another sum then appears. If your answer was wrong, space bar

gives the right answer, but your vehicle loses speed and the vehicle behind catches up a bit.  
You win when you get the vehicle to the top of the screen. You lose if the vehicle behind crashes into you.  
If you win, the crowd comes forward clapping. The scorecard gives the average speed reached and a rating (e.g. local champion).

Estimation is a neglected skill as it is very difficult to implement in the classroom using traditional teaching methods. "Number Chaser" is a game designed to fill this gap and which is fun both at home and at school. In the classroom, this program should be used alongside traditional or computer aided methods of learning tables, as a valuable extension of the work.

So says the booklet that goes with the program.

I didn't find it necessary to make a great deal of notes - there isn't much to say.

First Group: 3 girls: B, S & M.

I don't think the girls (well, 2 of the 3) got a great deal from this program - partly due to the fact that I hadn't familiarized myself with it.

They took turns at tackling the estimation problems. They had two goes: one with the bicycle and one with the jalopy. They managed eventually to get both vehicles over the finish post. S. wasn't very good at it - too slow really - there is a limited time to reach a decision - but in this case it seems

CODE: Hf40

necessary because it is about estimation and the idea is to come to a quick rough answer and not spend time working it out exactly.

I asked the girls what they thought of it and they said "okay" but I felt it was obvious they hadn't really enjoyed it.

Second Group: 3 girls: E, E & S.

These girls took turns over each problem sum.

First they chose the bicycle - result - "learner" - average speed 10 mph.

This group got the bicycle to the finishing post much more quickly.

Second go they chose the jalopy - result - "learner" - 5 mph

They seemed to enjoy it more than the first group.

Third Group: 3 boys: M, L & A.

These boys decided to have a go each.

M. went first and chose the stock car (had seen the girls use the jalopy): Result - "learner" - 31 mph.

A. went second and chose the stock car - result - "local champion" - 39 mph

L. went third and chose the stock car - result - "learner" - 27 mph.

This group clearly seemed to enjoy the program and found it quite challenging. They got into the graphics and sounds and made lots of "brum-brum" noises and made comments like "we're pulling away now", and when doing well "it's not all that hard".

CODE: Hf41

Fourth Group: 3 boys: K, G & A.  
These boys decide to have a separate go each.

G. chose the jalopy: result - "national champion" - 31 mph

K: G wanted K to choose the stock car, but K. manages to make his own decision and chooses the jalopy. He requests help from G. and A. "Help me " he cries quite often. Result - "learner" - 22 mph

A. decides to have a go at the stock car. G. thinks A. is a "good sport" for choosing the stock car. K. says "it's harder". A. says "but it's only a game". He however, incurs the first crash.

They have one more go - all working together (and some help from me). The stock car is again used: results - "learner" - 20 mph.

Fifth group: R & J.  
J. says he has seen a similar game before - at home.

J. goes first and selects the stock car: results - "local champion" - 36 mph

R. also selects the stock car: results - "learner" - 24 mph.

I was surprised at how well these two boys did - compared with past performance - they showed keen interest and wanted more goes - in the lunch break too.

Sixth Group: 3 boys: S, M & D.  
M. selects the bicycle because it is the easiest - he seems aware of his own lack of ability: result - "learner" - 11 mph.

Then S. has a go - chooses the bicycle: results: "local champion" - 12 mph.

CODE: Hf42

D. to begin with says he doesn't want a go but does after I persuade him (the other two were keen to take his go). I told him not to worry - the worst that could happen would be for him to crash into the vehicle behind. So he does have a go - with the bicycle: results - "learner" - 11 mph. He seems pleased to have done as well as the others.

Seventh Group: 3 girls: K, P & K.  
They decide to have a go each.

K. first: selects the stock car: but it's too hard and she quickly crashes.

P: selects the jalopy: results - "national champion" - 31 mph.

K: seemed keen to have a go at the stock car although had seen K's lack of success. But she does well: results - "local champion" - 36 mph.

The bell rings for Lunch, but K requests another go. I let her - A. (from group 3) joins in too and I help also. Results: "world champion" - the stock car - 60 mph. A. did most of the thinking.

Several wanted another go during Lunch but I had to go and they weren't allowed to stay unattended.

Also, during the morning several of the children came to watch the activity at the computer, when it was not their turn. They are nearly all interested in it.

CODE: Hf43

General Comments.

About the program: Most of the children found it challenging and some found it quite difficult. They liked the graphics - particularly the clapping at the end.

At times I found it quite frustrating when children nearly made it to the finishing post but then got a few questions wrong and slipped back - this demanded considerable determination and concentration to get on and finish.

Also, watching it all morning, the graphics made my eyes ache.

It was interesting to see how they coped with estimations of multiplications beyond the 12 times-table (i.e. with the stock car). A lot of them didn't really have a clue how to work out the estimate - I encouraged them to round the figure up/down to the nearest 100 or 50 e.g.: -  $7 \times 683 \sim 7 \times 700 \sim 4900$  or, more

likely,  $7 \times 112 \approx 7 \times 100 \approx 700$

I notice that K (group 7) did do something similar: e.g.  
 $7 \times 68$  : she did  $7 \times 6 = 42$  and added the 0  $\approx 420$ .  
This generally worked okay, but not when the number was not rounded up i.e. a closer estimate of  $7 \times 68$  is  $7 \times 70$  as 68 is nearer 70 than 60 - K. just took the first digit of the number.

CODE: Hf44

Just reminder for next visit.

CODE: Hf45

DATE: Tuesday 4th February 1986

Arrived at 9.30am - spoke briefly with the D/A Head about my next visit - not next week as it's half term, but the week after that - but it won't be on a Tuesday (inconvenient) - but we didn't finish our conversation as he was called away (again).

I went along to J4 class and found the computer in it's normal place (plugs/sockets must have been fixed). It was all ready with a program: "Lettergrab". I had never seen it before and had no idea how it worked. I didn't get chance to find out before the first group arrived. I could get the little man moving about the screen (by using the arrow keys) but I couldn't get him to pick up letters. I pressed the Break key and got to the start of the program and found the instructions - space bar did the trick.

About the program: "Lettergrab".

Basically the pupils have to direct the little man about the screen, up and down ladders, and then when the man is under a letter they want, (in order to reveal a message at the bottom of the screen), they press the space bar. The little man then collects the letter and moves

CODE: Hf46

along the bottom of the message and any occurrence of that letter is then revealed. Then the pupil directs him off again.

A	B	C	D	E	F								
G	H	I	J	K	L	M							
N	O	P	Q	R	S	T	U	V	W	X	Y	Z	
						$\frac{O}{\begin{matrix} /I \backslash \\ / \quad \backslash \end{matrix}}$							

There are 0 - 9 levels of "difficulty". Level 0 is the hardest - this is because there is less time for the little man to select a letter. The box shape at the top of the screen empties of colour whilst the little man is collecting letters and only when a letter is successfully placed in the message does the box fill again. At the hardest level, the box empties more quickly. The pupils on occasions got quite excited when they selected a letter which wasn't in the message and had to direct the little man off again to get another letter when the box was nearly empty. When the box is empty, a monster is released which will "kill" the little man on contact. A few groups purposely took their time so that the monster would be released.

CODE: Hf47

First Group: 3 girls: B, M & S.

B: level 9 selected - message successfully completed:  
I can run and hop and jump.

M: level 7 selected - message completed: order of letters:  
A E I O U C L T N H S F W  
I felt it was hot in the sun.

S: level 0 selected - almost immediately eaten by the monster.  
S: level 5 selected: message completed: order of letters:  
K U D T L E F I W S H O N A  
I felt it was hot in the sun. (again).

S. had trouble controlling the arrow keys.

Comments: "good": M: "better than last week's program".

Program criticism: The same message kept re-occurring - not very good at all.

Second Group: 3 boys: A, L & M.

A: level 4: message completed: order of letters:



A E C T I N D S G M O K R U J P H  
I can run and hop and jump.

L: level 3: message completed: order of letters:  
A I S T F E C M D O R P L N G H  
I slide along in the frost.

M: level 8: message completes: order of letters:  
U O E I A D S G B T N L W  
A dog will sit and beg.

This group tried hard to guess the message when only a few letters had been revealed.

They, liked most groups, arrived before the

CODE: Hf48

previous group had finished so they knew how to work the program before their go - and also some of the messages.

Comments: A: "Boring because it's too easy... I'd much rather have the Map program".  
L: "easy".

Third Group: 3 boys: R, K & J.  
R: level 7: message completed: order of letters:  
E A I U S N C T H P B R O M R F L  
I can splash in the bath for fun.

K: level 7: message completed:  
I want a drink of milk.

J: level 6: message completed: order of letters:  
A E S W T O R H P D U N M C  
A cup can drop and smash.

Comments: "It's a nice game".

Fourth Group: 3 girls: E, E & S.  
E: level 6: message completed: order of letters:  
A C S O M D H N R P U  
A cup can drop and smash.

E: level 5: message completed: order of letters:  
A E S O T R N I U D C H W B L  
I can hit well with a bat.

S: level 6: mesage completed: order of letters:  
E A C O K R N M W J I B M T H L G  
A man went into the log cabin.

CODE: Hf49

Fifth Group: 3 girls: K, P & K.

P: level 5: message completed: order of letters:

L S A N C I E M T O G R H K W P

I can not skip with string.

K: level 2: message worked out after 9 letters:

A I S T L R N W O M K F D

I want a drink of milk.

K: level 1: same message so started again.

Message worked out again after only 4 letters.

I can hit well with a bat.

This group waited for the monster to come out.

Comments: when waiting for other group to finish: "it's a slow game".

Sixth Group: 3 boys: S, C & G.

G: level 7: message completed: order of letters:

A E C T L N O W H S M P G K R I

I can not skip with string.

S: level 6: message completed: order of letters:

A E N C B D R O T P U S M H

A cup can drop and smash.

Bell rang for lunch as seventh group arrived (A & L) so A, L and C worked together:

A, L & C: level 5: message unfinished as had to go for Lunch.

C. showed great interest and enthusiasm - guessing messages.

CODE: Hf50

Chat with D/A Head.

I talked to the D/A Head for 10 mins before leaving: arranged next visit for Feb 19th - in the afternoon because of Welsh lessons and because of open-planned school and oral work and the implications.

Arranged to administer the attitude scale on the top two classes - yes that's fine - he kept a copy to look at.

He's very accommodating, but always seems to be in such a hurry and it is difficult to catch him for a five min chat.

He made several interesting comments - the class is doing work on planets and a parent is providing a program to show the motions of the planets. Apparently he edits programs to suit the school (I've seen no evidence of this). A useful connection for the school and also good for teacher-parent relationships.

Also "whiz kid" has apparently gone off computers since going to secondary school where there is no follow-up - "And in any case they are more concerned with academic work there" - an odd comment. Does he think computers are just for games too?

He also said that the top class had worked

CODE: Hf51

through most of their programs and he thinks some one who can write programs for the school is needed (What!).

Basically when I visit the school I'm pretty much left to get on with things by myself.

Pupil Reaction To The Program:

I think many of the pupils found the program quite good, but slow too; easy and not challenging enough for the more able pupils. (But I don't think the ASK programs are much better). Many found it unchallenging enough to want to get the monster out.

The Break-Time Incident:

During Break, as usual, some wanted to stay and have another go (or better still put "Hopper" on). I stayed for ~5 mins - I let one of the boys have a go at the "Tables Adventure" program and then sent them away because I wanted a cup of coffee (couldn't be left unsupervised). I went, but when I came back the computer wouldn't go - I didn't panic, just thought "Oh ...". The monitor wouldn't show anything on the screen and the computer made an odd noise. I checked all the connections - with quite a large group of children around offering pretty unhelpful suggestions. One got Ms.J2. We looked at it together and I found a

CODE: Hf52

thickish piece of chocolate had slipped down by the BREAK key and jammed it. Ms.J2 got a knife to get it out and I blew and flicked other bits away. Fortunately it came out easily and resolved the problem. Thankfully!

During the Break one of the Infants' teachers in the staff room commented that she knew nothing about computers - "Give me a piece of paper and pencil anyday." This wasn't meant as an insult to my work.

CODE: Hf53

DATE: Wednesday 19th February 1986.

I arrived at 1.20 - twenty mins into the afternoon as requested as they have Welsh language work before and as it is open planned, most of the classes have it together.

I was surprised to see that the Head is back. The D/A Head was there - now Deputy. We chatted - he asked if I could let him know a week in advance when I wanted to do the attitude scale - so I asked to do it next time I visited. At the end of the afternoon I spoke with the two teachers of the top two classes and arranged to go in next Thursday morning. The Deputy also said "Don't worry or bother much with the Head as he's not really interested."

The rest of the afternoon was spent with J1. When I arrived Ms.J1 was telling the whole class how to operate the program and what to do. I was not pleased to see them using "Number

CODE: Hf54

Chaser" - I'd seen enough of that with J4. I only got these programs for the school to show thanks/be helpful/reinforce relationships - I did not expect to see them in use each visit.

However it was quite interesting to see this program with younger children. All of them used the bicycle (the easiest level). (For information on the program see Hf39)

Ms.J1 left me, after asking a few questions about the program, with a group of four children (they usually work in groups of four at the computer). However, as it turned out, each child took a turn - but most received help from the others waiting for their turn. The teacher gave their team/group a point if they completed the program. So if the others standing around the computer were not in the same team, they were reluctant to help the user.

The Children: Results.

(1) Rac: does it on her own and then returns to her seat  
(another Rac joins the group around the computer).

(2) Mat: crashes.

(3) Jas: 9mph: learner.

(4) Ala: 10mph: learner.

CODE: Hf55

These three boys (2,3,4) were really enthusiastic - very excited - jumping about (especially Ala). A very favourable reaction - they seemed to find it quite challenging and liked the graphics too.

NOTE: the computer was set up (on the trolley) in a small open room in the classroom - it was also a thoroughway. There were times-tables on the wall - if the children used them to find the answer there usually wasn't enough time - they only succeeded if they were quick. They got on much better when others helped by calling out answers and shouting out which lane to go to.

(5) Rac: 13mph: local champion.

(6) Lis: 4mph: learner: very slow but she stuck with it.

(7) Ang: slow - she finished off during afternoon break.

(8) Nei: started during Break - enthusiastic.

After Break Ms.Jl said I could try another of the programs. I decided to have a go at "Children from Space". It took me a few minutes to sort out. I also explained what was involved to Ms. Jl.

In this program two children, Beng and Zoma, from

CODE: Hf56

Out of Space write a report to their captain. First there are five sentences with a spelling mistake. The sentence has to be typed in with the correct spelling - including capital letters and fullstops.

Then there are five sentences that have to be put in the past tense, from the present tense. These were difficult - e.g. "The girls are skipping". Past tense "The girls skipped". But "The girls were skipping" isn't accepted. So I went through these and let the children work on the next section: unjumbling sentences. And that is as far as they got.

(9) Gar: correcting the spellings in two sentences: no --> know  
sore --> saw

(10) Gav: bort --> bought  
afrade --> afraid

(11) And: Very giggly.      snak --> snack.      spaid --> spade.

(12) Nic: no --> know.    Then tense change: come --> came.  
Very giggly too.

(13) Sim: Started on the tense changing sentences but I decided  
that they were too difficult, so I finished them and let Sim  
continue with the next problem: re-arranging muddled words.

CODE: Hf57

"filled sand the Beng with bucket" --> "Beng filled the bucket  
with sand" (the children found this pretty difficult).

(14) Jam: "sea sand the by castle A spoiled was"  
"A sand castle was spoiled by the sea"

(15) And: "jogger beach ran A the along"  
"A jogger ran along the beach"

There was no time to see any others.

Other Comments: When I first arrived the Head and Deputy both  
said that Wednesday afternoon was quite a difficult time to visit  
because some had been swimming in the morning and usually the  
afternoon was taken up with art and crafts. However, Ms.J1 asked  
if I would be coming next Wednesday - she thanked me and said she  
found it helpful to have someone with the children whilst they  
were working at the computer (she also said she had problems  
loading - she didn't realize that 'shift break' had to be pushed  
together to run the program).

I did think I'd do the attitude scales today and was surprised  
when they asked for a week's notice - so at the end of the day I  
arranged to visit next Thursday and see J3 and J4.

CODE: Hf58

No other comments really. I was pretty disappointed with what  
went on but then I shouldn't really expect much.

DATE: Thursday 27th February 1986.

Arrived at 9.45am as arranged - the children listen to a radio program after assembly. Spoke briefly with Head (who must be back for good) and then went along to J4. Spoke to Deputy and arranged to give attitude scale to J3 first and then go along to J4 and do the same.

9.50 - 10.15: Attitude scale with J3.

Handed out the two sheets after explaining that I was going to spend some time with them in order to find out what they thought of the computer in school. I pointed out that there were no right or wrong answers - I was interested in what they each thought, as individuals, of the computer in school.

I read out the first statement and explained

CODE: Hf59

that if they agreed they'd tick that box etc. I then proceeded to read out a statement myself, or get one of the pupils to read one out - but I found that several of the pupils went on ahead and had finished long before others had. It was the least easy class to manage - partly because of the classroom organization - two tables of girls in an inner room, two tables of boys in the main classroom area - also noise from J2 (because of the open-planned nature of the school). Mr.J3 was very helpful - he helped make sure that the children understood, and helped them with their dates of birth. I don't know if it will affect the results, but this is the only class I have not "worked with" - observed them using the computer. (I arranged to visit this class next week).

10.15 - 10.30 (finished off after Break).

Attitude scale with J4: same procedure as with J3 - explained what I wanted to do. Decided to read out only the first five or six statements with the whole class and let them finish it, with me being there to help them with any problems. This worked well - I told them to take their time and think about the answers, and they did. Some of them had finished by Break and the others finished off after.

When I'd collected them all in it was shortly after 11am. The Deputy asked what I'd like to do next - he explained that the children had a TV programme to watch, but some could

CODE: Hf60

work on the computer with me - I said that was fine provided they

did not mind missing the programme - he asked the class - all (virtually) put up their hands requesting to use the computer (one boy, Ani, said that the TV programme was "boring"). The Deputy looked at his list to find out who had not had an opportunity to use it last time. I took this group to the computer (some boys had wheeled it in and plugged it in - it's only the deaf boy who occasionally uses it on Thursday morning). He said I could use any program I liked. He basically left me to get on with it.

First Group: 3 boys: K, G & R  
I asked if they had any preference. They all requested "Hopper", but I said we wouldn't be playing a game. They didn't seem to have any other preference, so I put in a disk and R. did \*cat (disk 3).

CH."BOTTLES" first: but this was far too easy.

CH."A": A program called "Look it up" - two levels - finding which volume a letter (level 1) or word (level 2) would be in.  
For example: Vol 1: abacus - deep.  
Vol 2: deer - girl.  
Vol 3: give - joke etc...

Then they have to decide what volume they'd find the word "deaf" in for instance.

CODE: Hf61.

They tried each of the levels and then asked if they could try something else.

CH."EUROPE": This program presented a series of questions of the format: "What is the capital of....?". The answer was either right or wrong. Even if they knew the right place but spelt it incorrectly the answer was considered wrong. However, they seemed to find this more challenging, and actually got several of the answers right.  
There were no graphics on this program and not even a score was given at the end. If the answer was wrong, the correct answer appeared on the screen.

From this, several points emerged:-

- (1) The importance of the program appearing challenging - children don't like those that are too easy - or too hard.
  - (2) Children are not over impressed with graphics - a poor or unsuitable program with good graphics - the graphics don't compensate.
- Best is a stimulating, challenging program with good graphics.

Second Group: 2 girls: E & S.  
Same disk, other programs tried - I wanted to have a look at some more of the programs.



CH."MAKE37": "A game for two players".  
Player one chooses a number between 1 & 5.  
Player two does likewise but can't select the number just chosen  
(but that number becomes free next go).

CODE: Hf62

The player has to add this number to the previous number and type  
in the total.  
Play continues.  
The game is either won by a player making 37, or forcing the  
opponent to go above 37.

First game: trial run: E won.  
Second game: E won.  
Third game: S won.

They appeared to find this game quite challenging - it did  
involve some strategy when 37 approached. But three goes was  
enough. E said "It's quite good".

They asked if they could try something else.

CH."WITCH": Program called "Witches Brew".  
E. said she'd seen this program before - at home.  
This program presents muddled up foods - the words have to be  
unscrambled and typed in. The witch nods if the answer is right.

Names of foods muddled up: curry, oranges, lettuce, custard,  
biscuits: I helped with oranges and custard. With biscuits f0  
function key is pressed for a clue: "a snack".

They seemed to quite like this but wanted to try something else.

CODE: Hf63.

CH."ALPA": not suitable - for entering data (and no notes - with  
anything).

CH."NUMBER": Program called "Number Drop".  
For this program, numbers have to be arranged in increasing  
order: lowest on the left, highest on the right. The numbers are  
picked up by the crane, and space bar drops then into buckets.  
Not easy as there's only a split second to look at the numbers at  
the start, in order to work out the position of the first number.  
They had a few goes at this until Lunch time.

Other Points:

The school was striking in the afternoon and, as a result,  
attendance was low, so 8 J3 and 5 J4 missed the attitude scale.  
I must catch them next visit.

Mr.J3 commented that he didn't feel particularly confident with the computer and that one computer was not enough - it takes about two weeks (two computer sessions) to allow time for everyone to get a go. He also said that a disk-drive was vital - and commented on how using a tape machine had been so disappointing, particularly as he'd had high expectations about the introduction of the micro.

CODE: Hf64.

I wonder how much any of the results of the attitude scale will be affected by the fact that I hadn't worked with one class J3. Or rather, I should say, how will the results be affected by my presence? J4 showed a much warmer attitude to the filling of the attitude scale (I wonder if that reflects their attitude to the computer), Ani even asked if I had any more sheets to fill in as they were "good".

CODE: Hf65

DATE: Thursday 6th March 1986.

Arrived on time - said "hello" to the Head and went along to J3 class. Mr.J3 seemed quite pleased to see me - apparently he's been off for the three previous days - a mixture of illness and industrial action. (Trust the Industrial Action to be reaching resolution just about when my school visits are ending). He said he wasn't sure if the computer set up was operational because there had been trouble with the disk-drive - but Deputy said it was fine. Two boys collected the computer and set it up just off J4 (in the usual place).

General Comment: I feel I have learnt much about the role/place of the micro in primary schools.

I asked Mr.J3 if he wanted any particular program to be used - he said "no" - he confessed he didn't know exactly what was there. He added that they'd been doing some work on co-ordinates and wondered if there was a program using co-ordinates. I said I'd look, but didn't find one. I asked the Duputy (Mr.J4) if there was one - he said he thought perhaps there was, but wasn't sure.

Comment: One of the things this school lacks is some sort of classification of programs - it isn't possible to tell by the name of the program what is involved.

CODE: Hf66

And they don't appear to have any accompanying information to go with the programs. What's the point of having a library if you don't know what books you've got, don't know how

educationally valuable they are and don't have any system of finding out these two? Ms.J2 seems to have some special interest in the use of the computer and is probably familiar with more of the programs - but not all of them. And I ask the children if they have done certain programs before, and they don't know, maybe largely because they weren't memorable. Anyway, at least it provided me with the opportunity to look through some of the programs. Mr.J3 gave me a free rein to select which programs I wanted to use.

Mr.J3 consulted a list and decided who should use the computer first.

First Group: 2 boys: K & S.  
I put in disk 5 and had a look at some of the programs.

The children showed enthusiasm for using the computer, but once again, requested "Hopper".

Loaded "3W": a program which involves memorizing three words - just looked at the instructions and decided it wasn't what I wanted - at this stage I was looking for something to do with

CODE: Hf67

co-ordinates, or at least mathematical.

"Bomber": a program based on tables questions.

Mr.J4 suggested "Symmet" (though not co-ordinates, he thought it might be on the same disk).

"Symmet": Disk 4.

A drill-and-practice program with useless graphics. The boys had a go at this - locating a line of symmetry. They weren't familiar with symmetry, but managed to get the hang of it. They had a few goes and then requested trying something else.

"Vennman": two or three shapes on the screen with letters about. (e.g. overlapping circle, square and triangle). They have to answer questions of the type: "which letter is in the triangle and the square, but not in the circle?" They weren't familiar with Venn Diagrams, but quickly got the hang of it. Each correct letter allowed a piece of a "man" to appear on the screen - getting all the questions right put the man together. They had several goes at this, mainly because, as K commented: "I like putting this man together".

"Cat&Mse": keyboard familiarity program. They had a couple of goes at this - thought it was quite fun.

CODE: Hf68

"Brickup": This program was used for the rest of the morning. Children have to guess and spell correctly words on the basis of a cross-word type clue, with the first two letters given. If they spell the word correctly, they have the "reward" of firing at a wall. If they break through the wall, the game ends. If they don't know the word, or can't spell it correctly, another layer of bricks appears.

Generally the children enjoyed the game and it was hard enough for them to find it challenging. But basically it was an instructional program using rewards. They weren't solving the clues and spelling the words for their own sake: the incentive was a shot at the wall.

Faults: although the program did sometimes recognize that the children knew the words but were unable to spell them correctly - frequently, this was not the case.

The children utilized the dictionary and I helped sometimes too.

K & S had one go at "Brickup":

knives, forks and spoons	=	cutlery
to keep away from something	=	avoid
to do with teeth	=	dental (didn't get this)
coming at the end	=	final (didn't get this)
poisonous fungus	=	toadstool
very large	=	enormous
lifelike - not real	=	realistic (put 'real')

CODE: Hf69

a doctor who performs operations	=	surgeon
to do with teeth	=	dental
pig's meat in slices	=	bacon
lifelike - not real	=	realistic
very deep sorrow	=	grief
feeling in need of food	=	hungary
10 hundred	=	thousand

TOTAL: 11/14 = 79%

During Break:

Asked Mr.J3 and Deputy (Mr.J4) if any of those who missed the attitude scale last week were here today and could do it today.

After break: I left some groups working on "Brickup" whilst I administered the attitude scale to the absentees.

First group of absentees (4 boys) J3 worked on "Brickup" whilst I administered the attitude scale to 4 absentee J4 pupils - I explained what I wanted them to do, as I had before. And I kept an eye on the "Brickup" group at the same time.

When the J4 pupils had finished, they went back to class. Then

the group of two J3 girls did the attitude scale and when the they had finished, I let them have a go at "Brickup" (they'd been watching the boys before). I then administered the attitude scale to the absentee group of four J3 boys. When they finished, they went back to class. And so did the girls using "Brickup".

CODE: Hf70

J & A (the two absentee girls who did the attitude scale):  
 "Brickup" Results: 19/24 = 79% (some help from me).  
 11.25am: next group: 2 boys: N & A (others helping - mainly one boy, A, who has a go later)

Results:

an amount	=	quantity (help from me + dictionary)
a person who has no courage	=	coward
a sale where people bid for items	=	auction
to honour and adore	=	worship
a prickly plant with fleshy leaves	=	cactus
to do with the night	=	nocturnal (help from me)
to deceive or puzzle someone	=	baffle (help from me)
an extremely clever person	=	genius
to strengthen	=	reinforce (didn't get this)
a road bordered by trees	=	avenue
a newspaper reporter	=	journalist (help from me)
money paid to a retired person	=	pension
surprise or amaze	=	astonish (didn't get this)
the outside of a building	=	exterior
to become gradually worse	=	deteriorate
fully grown	=	mature
surprise or amaze	=	astonish

TOTAL: 15/17 = 88%

CODE: Hf71

A. has a go on his own - he is a very good speller and is good at guessing the words.

A's Results:

to answer or reply	=	respond (help from me)
to strengthen	=	reinforce
a type of chalky rock	=	limestone
coloured paper thrown at weddings	=	confetti

TOTAL: 4/4 = 100%

A. has another go but doesn't finish as the bell goes for lunch. I arrange to go in next Thursday.

CODE: Hf72

DATE: Thursday 13th March 1986.

Arrived at 9.45. Went along to J3 "area". They were listening to the end of their religious broadcast. Then the computer was set up. Mr.J3 spoke to me briefly - all he did was to say which children should go next - he said I could use which ever program I liked.

I found out that there wasn't any information other than that which was in the box - so basically no information to go with several of the disks. At one point I was looking at "Eureka" but couldn't work out what to do. Mr.J3 didn't know either. He doesn't seem familiar with many of the programs.

First Group: 2 girls: M & S.

I put in disk one and had a look through these programs (early programs - probably came with the computer).

"Anag": - program called "anagram": muddled up letters - all answers shown at the top of the screen. The children had to unscramble the letters. Different levels. If answer is correct then "jolly good", "quite correct", "full marks" etc!

CODE: Hf73

The girls took turns at the words.

Mr.J3 said it was good for them to have the practice as they missed having the computer on Monday - practice at using the micro rather than the work being done.

There were 1 - 12 levels of difficulty. The girls tried 1, 5 and 10. But even the "very advanced" level wasn't much more difficult - only longer words used. But all the words - 16- displayed at the top of the screen. The word just had to be identified and unscrambled. I did try covering up the words - this made it somewhat more difficult. There should have been some way of choosing to do this. But it's only a very simple program. They also encountered a problem - they wanted to type "don't" but the computer wouldn't accept the "'". I ended it by pressing escape at this stage.

They then had a look at "Build2": directing a three-D square around the screen, making 3-D drawings using "in", "out", the four arrow keys and "x" (no. plotting). They explored this a bit - seemed quite keen on it. I didn't think it very satisfactory graphically speaking. They ask if they can draw a house - they do make an attempt but get bored with it.

They try another program.

CODE: Hf74

"Spike Abacus": Using an abacus, it asks:-

-how many hundreds?

-how many tens?

-how many units?

-what is the number?

It was not easy for them to realize the whole number. But they do get the hang of it quite quickly. Also as an option they could put beads on the poles to indicate numbers.

After Break: Second group: One boy and one girl: V & A.

I taped these using "Ergo".

Still with disk one.

"Eureka": couldn't work out what to do.

"TestC": just a test card.

"Trains": too easy - simple sums.

"Box": seen before.

"Ergo" (TAPE No.6:Side A)

Finding the patterns between the numbers (seen with slow group at F. Secondary school).

It shows a square, 5 by 5, with two numbers revealed. The patterns of numbers has to be worked out. Initially guess work is needed (but the program responds with "too large" or "too small") until the

CODE: Hf75

the pattern is spotted (geometric and arithmetic progressions). They score points for every number guessed correctly the first time.

Results:

First go: 75/100

Second go: 80/100: the computer then suggests a more difficult level is chosen: the pattern more difficult to work out.

Third go: more difficult level: 20/100

Four go: 40/100: easier level.

Fifth go: 80/100: easier level.

Sixth go: 30/100: difficult level.

Good co-operation. A. quick at working out the patterns. Program quite challenging. V. mainly directing the cursor to the squares - A. doing the thinking.

V and A. finish after 20 mins.

-----  
NOTES ON TAPE:

TAPE No.6 Side A

Counts: 000-210 (~20 mins)

Fieldnotes: Hf74/5

The tape recording picks up the children's talk about the program - mostly A; V directing the cursor. Shows the children's strategy (but quite a lot of direction from me - too much)  
See accompanying fieldnotes.  
-----

Third Group: 2 boys: R & M.

"Morless": putting in <, >, and = signs in. Quickly too easy.

"Time": Seen before at another school (c) - too easy.

New disk: commercial: Ladybird/Longman

"RallyA": visiting towns: questions answered correctly, more fuel received. Levels of difficulty for the sums: multiplication, divide, addition and subtraction. Sums really easy, or very difficult - long multiplication and division.

Hopeless graphically! Not a particularly good program.

CODE: Hf76

The pupils have to visit the towns marked by a letter on the grid. When they have done that, the time, the number of units (squares on the grid passed through), the units of fuel left and the number of sums asked and answered correctly is reported.

Results:

M:

3 mins 16 secs

25 units

1 unit of fuel

10 sums asked

8 correct

R:

2 mins 24 secs

29 units

1 unit of fuel

14 sums asked

10 correct

M. is called away to look in the library van.

R. selects a very difficult level - I have to help him with the long multiplication sums. He can't do them without help. This goes on until lunch.

General Comments:

Today gave me further opportunity to look through some more programs.

The children seemed pleased to see me and keen to have their turn at the computer.



CODE: Hf77

DATE: Thursday 20th March 1986

Arrived 10 mins late (traffic).

With J3 for the morning - the computer was brought in and plugged in in the usual place - cloakroom area off J4.

The kids seemed pleased to see me and very keen to have their go at the computer. But in actual fact I only saw two groups of two - one before Break and one after (I left it to Mr.J3 to select which ones came to me and for how long - he left it to me to select the programs to use).

First Group: 1 girl, 1 boy: V & A.

ASK programs: "Tables Adventures".

(1) "Shooting The Rapids": when the canoe hits the rocks they must find one of only two numbers that divide exactly into it (not counting one and the number intself).

Good graphics on this program - generally went down well.

What happens is that the canoe hits the rock and a number appears - e.g. 14 - they then type 7 or 2 and the number 14 is divided giving 2 or 7. The canoe then goes on. If they get the number wrong, the canoe sinks and they have to start that course again. If the canoe successfully reaches the end of the course, the man jumps out, waves his arms about and a little tune is played.

This program is not bad - quite challenging - e.g. find the factors of 51. Graphics are good - the little man went down well - but basically it's a drill program.

CODE: Hf78

When the canoe successfully completes the course (this may take several goes) the time it took (in seconds) is given. This encouraged the groups to do it more quickly next go.

Results:

First go: 328 secs: Second go: 119 secs: Third go: 146 secs.

This group then had a go at:

(2) "Underground Escape"

Similar to the previous one but this time they have to direct the little man up from the bottom of a mine shaft. He encounters boulders with numbers on them - three numbers are shown on the rocks to begin - they have to find the numbers that divide exactly into two of them. If they do this successfully the boulders disappear and the man can continue climbing. If not - they can have several goes - the mine fills up and the little man drowns.

Results:

First 2 goes: the man drowns.

Second 2 goes: they successfully get the man to the top.

A's Comments:

"That canoe's better. It does say how long you took on this one".

But general comments: "smart these"

V: "can I press the arrow keys this time?"

They have another go.

CODE: Hf79

They then have a go at:

(3) "Rainbow's End"

They select a times table between 2 and 10 - they select 5. The tables grid is shown: the multiples of 5 are given. They have to say how many hops of 5 would reach one of the multiples (e.g. 35 = 7 hops).

They don't spend long on this as the bell rings for Break.

Comments: A: "I've done no work this morning"

After Break:

Second Group: 2 boys: R & M.

They had a long session - more than an hour (!).

First they have a go at:

"Shooting The Rapids"

M dominates and takes his turn first. Completes it in 146 seconds.

Then R has a go - but M takes over. M then wants to try something else, so they have a go at:

"Rainbow's End"

But they select the 2 times table and only spend a short time on this before wanting to move on.

"Number Families" (TAPE No.7:Side A)

With this program, either numbers 1 - 20 or 1 - 60 can be selected. What happens is the cursor is moved along to the desired number and return is pressed - if that number has any factors then it is blocked out along with its factors - a score is given (the sum of the number and its factors). Then another number is selected (from the remaining numbers) and the same thing happens. If it doesn't have any factors, or

CODE: Hf80

its factors are already filled in, then it can't be selected. The idea is to get the highest possible score.

Results: (with numbers 1 - 20)  
M: 60: R: 80: M: 81: R: 68:

I gave then a few tips like selecting 19 first as 1 is its only factor and 1 is always blocked out with the first number (so if 19 is not selected first, it can't be selected later). They have another go and score 87.

I need to actively stop M dominating and let R have his go. If I hadn't been there R would have merely sat back and watched.

M. asks if he can have a go at using the numbers 1-60. They do.  
Results:  
M: 651: R: 786.

-----  
NOTES ON TAPE:  
TAPE No.7:Side A.  
Counts: 000 - 161  
Fieldnotes: Hf79/81

A recording of children working at the computer. A lot of guidance from me - too much again. But they quickly seem to pick up on my "tips" and use them on successive goes. See accompanying fieldnotes.  
-----

M then says: "Shall we play a new game, yeah?"  
I press BREAK and load the programs again - "Children From Outer Space" automatically comes up for some unknown reason.

CODE: Hf81

They wanted to try it so I let them, though I don't think much of it.

They went through the sentences that have to be typed in with the correct spellings. This actually worked quite well: they seemed to like writing it down and responded to the graphics (I had to actively tell M to keep back and let R have his go).

But then sentence appeared: "children are fighting in the corner" No spelling mistakes in that. I suggest they type it in in the past tense - but that doesn't work. Can't resolve that one so they move back to the "Tables Adventures" and have a go at "Underground Escape" and the "Self Test" program.  
(the recorder batteries run out so have to change them)

Interesting with the "self test" program - had to select whether they were: "slow", "moderate", "fast" or "very fast".  
M selected "fast" (and he was - 9/10)

R selected "slow" but he was fast too (7/10).  
R seems to lack self-confidence. Can't imagine R & M working well together!

CODE: Hf82

This was my last visit to Headland school. I think I have seen enough. There doesn't seem to be a great deal more to see. Basically what they are doing is unadventurous and pretty much unplanned - except that they have a timetable.

I said my good-byes: Mr.J3 thanked me, and I thanked him. Said cheerio to Deputy (Mr.J4) and the Head, and they both said that I can call in anytime, if I'm passing or any thing. I said I'd keep in touch, by phone (see if anything new is happening or any plans).

CODE: Hf83

DATE: Thursday 11th September 1986.

I telephoned the school, intending to arrange a visit to go in, but was unable to!

I spoke to the Head, explained who I was and asked if he'd settled into the new term:

Head: "No, not yet. There's been one staff change".

I asked if it would be possible to visit again, to talk more with the teachers:

Head: "Well, not really, we're very busy. How many visits would this entail?"

"Just one visit - I'd like to talk more to the teachers about what they think of the micro in school, and whether they have any plans"

Head: "Well, if you wanted to do something with the children...., you could talk to the teachers on your rounds, but..."

"I know it would be difficult, but it would be nice to talk to them quietly for 10 mins or so..."

Head: "Well, now you're living in cloud cookoo land! That would be impossible..."

CODE: Hf84

"Well, failing that, does that school have a brochure, or is there any policy statement about computers in the school you could pop in the post for me?"

Head: "Not really. The aim is to familiarize the children with the computer. For this, each class has the computer for a period a week... that leaves one and a half days for anyone to use it... for teachers to appraise software."

(Insertion: CODE: Hf85: He emphasized the aim of familiarity. He said, at the school the aim is to familiarize the pupils with the computer. He said they don't teach programming, but he seemed to have the impression that the school was expected to. He said teaching programming might be possible on a one-to-one basis but not with a whole class.)

I asked him: "Do you have any plans, to buy any new software...?"

Head: "It's a question of funds. We spent too much money on the machine as it was. Too much has been spent already. We took up the offer with the department of industry, but it cost us over £300. And now you can pick them up for much less. It was all a big con! They must have known about this."

Words from me about how quickly things developed with the technology - implying that I thought everyone was surprised how quickly things happened. I asked him how long ago they bought the micro - over 2 years ago. Then he continued:

"If there's any funds left over, then some software might be bought - the reception teacher was appraising software, but there isn't anything

CODE: Hf86

suitable for children just starting school. So, if there's any money left, we might buy something there."

I asked him: "Do you find it a problem choosing the software?"

Head: "Well, the catalogues are useless. It's best to find someone who uses the program and ask them".

I sympathized with this view, and the conversation ended - he'd succeeded in keeping me away from the school.

It is very clear from the conversation that he is disillusioned with the micro and feels bitter about the money "wasted". And from what I saw going on in the school, I am not very surprised! I also got the impression that he wasn't proud of the way the micro was being used (if at all now), since he made great effort to dissuade me from visiting. His tone was definitely not welcoming! His lack of enthusiasm indicates his attitude towards the computer.



CYNGOR SIR  
GWYNEDD  
COUNTY COUNCIL

1984-85

GWYBODAETH  
I RIENI

INFORMATION  
FOR PARENTS

HEADLAND

YSGOL [REDACTED]

Prifathro/Headteacher :

Mr. R.H. [REDACTED]

Cadeirydd y Llywodraethwyr/  
Chairman of the Governors :

Mr. G.W.S. [REDACTED]  
[REDACTED] Farm, [REDACTED].

Ysgol [REDACTED], [REDACTED] Môn, Gwynedd [REDACTED]  
Ffôn/Tel: [REDACTED]

Er bod y manylion yn y ddogfen hon yn gywir pan gyhoeddwyd hwy, ni ellir rhagdybio na fydd unrhyw newid a all effeithio ar y trefniadau perthnasol cyn dechrau neu yn ystod y flwyddyn ysgol neu mewn blynyddoedd i ddod.

*Although the particulars in this document are correct at the time of publication, it should not be assumed that there will be no change affecting the relevant arrangements before the start of or during the school year or in relation to subsequent school years.*

Ysgol [REDACTED]  
[REDACTED],  
Gwynedd,  
[REDACTED].

[REDACTED] School,  
[REDACTED],  
Gwynedd,  
[REDACTED].

Telephone [REDACTED]

Mawrth/March 1984

GYDA CHYFARCHION Y PRIFATHRO  
WITH THE HEADMASTER'S COMPLIMENTS

*Current Info Book is similar  
in most respects.*

HD 00/n Po

## 1. THE SCHOOL

Ysgol [REDACTED] is a County Primary School (Nursery, Infants & Juniors). It is a day, bilingual, co-educational school.

The school takes in new full time pupils once a year, in September, after their fourth birthday, i.e., must be five by the last day of the following August. ~~Children are admitted the term following their third birthday to the Nursery Unit on a part time basis, i.e., morning or afternoon only.~~

### The School Day

Morning session	Nursery	9.00 a.m. - 11.30 a.m.
	Infants/Juniors	9.00 a.m. - 12.00 p.m.
Afternoon session	Nursery	1.00 p.m. - 3.30 p.m.
	Infants/Juniors	1.00 p.m. - 3.30 p.m.

### Organisation

The school is of the "open plan" type with four distinct units.

Unit 1	3-4 year olds	Nursery	} UNIT 1 + 2
Unit 2	4-5 " "	Reception	
	5-6 " "	Infants 1	} UNIT 3
Unit 3	6-7 " "	Infants 2	
	7-8 " "	Standard 1	} UNIT 4
	8-9 " "	Standard 2	
Unit 4	9-10 " "	Standard 3	} UNIT 4
	10-11 " "	Standard 4	

There is a teacher for each age group or class plus one qualified Nursery Assistant to assist the teachers of Units 1 and 2. The classes are taught in ability groups and each group consists of up to 8 children. The group system is quite flexible so that pupil movement between groups is in no way restricted.

## 2. THE CURRICULUM

The function of the school is to foster and encourage the child's development as an individual and as a member of society. A thorough grounding in the basic skills is emphasised but regular class and group projects help originality and the development of the particular interests of each child. The aim is friendliness and the encouragement of the individual.

This means that in school the child will follow a curriculum which will -

- (a) develop the basic skills - listening, speaking, reading, writing and mathematical skills;
- (b) give him an opportunity to study and to interpret his environment;
- (c) foster a healthy social attitude;
- (ch) enable him to gain varied experiences and to give expression to them.

Apart from language - which is related to everything that is carried out in school - aspects of Mathematics and Science, Environmental Studies (nature, history and geography) and Religious Education are studied, all in accordance with the child's age and ability. Provision is also made for music, physical education, sports, art and craft work. Recorder lessons are offered to the seven year olds and violin lessons to suitable ten year old candidates. The facilities for physical education are very good and swimming lessons are offered to all pupils during their final year. The school has football, rounders and netball teams and participate in inter-school fixtures and county tournaments.

H Doclr P1

H Docun P1

Our aim is to try and ensure that the child, by the time he is eleven years old, is a child who is fluent and able to read and write in both languages, a child who is aware of the world around him as well as being a child who, in the course of his school career, has had every opportunity to develop fully according to his age, ability and aptitude.

#### Sex Education

No formal Sex Education lessons are given in this school.

#### Religious Education

The school has no direct or formal religious affiliation. The religious education provided is based on the agreed syllabus, a copy of which may be examined at the school. Suitable arrangements can be made for children whose parents object to them receiving religious education or attending religious service.

#### The School's Language Policy

- i) In accordance with the Gwynedd Education Authority's Language Policy both Welsh and English are given equal emphasis in this school. Our established goal is to try and ensure that every pupil is thoroughly fluent in both languages by the end of his primary school career. In endeavouring to achieve this the following guidelines are kept in mind:
  - (a) Once the child has settled into the school, attention is given to developing his oral skills in the second language, chiefly by taking advantage of the opportunities that arise daily in the classroom.
  - (b) At first we concentrate on developing the spoken language but the school's intention is to ensure that all children will be literate in both languages as soon as possible.
  - (c) In the Junior Section of the school increasing use will be made of the second language in all its forms, and we will ensure that every child encounters a variety of experiences in both languages, and applies them both in various contexts.
  - (ch) The language balance will vary somewhat in nature from term to term and from year to year, but the school's aim will be to ensure that every child can speak, read and write about every aspect of the curriculum and about his life and experience both inside and outside the school, in either language, without difficulty.
- ii) Every pupil in this school is expected to learn Welsh and English to the maximum of their capability. When non Welsh speaking newcomers come to the area special arrangements are made for them, and the Education Authority will help the school with that work.
- iii) Welsh is used as the natural language of school life in its formal and informal aspects. We always try to make sure that children who do not yet have a command of the Welsh language, fully understand the situations they are in, and we give special attention to any individual who has language difficulties.

#### Homework

The children are not given formal homework but occasionally a particular teacher may ask a child to do additional work in order to overcome some weakness or to concentrate on a special aspect of work.

- 7 c p 7



#### Pupils with special needs

It is ensured that children who need additional educational help are given special attention by the teacher or the peripatetic teacher who specialises in the field.

The special education unit which is part of the school offers suitable education to deaf children of the locality. These pupils join the other classes for many activities.

### 3. PASTORAL CARE AND DISCIPLINE

Great stress is placed on good social behaviour and this can be achieved by the example set by the staff, both teaching and ancillary, and the co-operation of the parents. Any serious misbehaviour or anti-social attitude is drawn to the attention of the parents who are then expected to fully co-operate with the school to eliminate the problem. By the same token the Headmaster and Staff will always welcome any approach made by parents regarding their child's educational or social development. Pupils at this school are disciplined in accordance with the policy laid down by the Gwynedd L.E.A. with the exception of corporal punishment, which is not administered.

#### School Uniform

There is no formal school uniform but children are expected to be dressed cleanly and neatly.

#### School Rules

A supplementary information sheet has been prepared and you should receive a copy with this handbook.

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YSGOL ~~XXXXXXXXXXXX~~

SCHOOL RULES

Absences

1. Parents to inform the school, by letter or telephone, of the cause of any absences.  
(If hospitalised the dates of admission and discharge should be included).
2. 'Holiday Form' to be completed if absence caused through parent being on annual holiday from employment.

PERSONAL PROPERTY

Personal effects should be kept to the absolute minimum as the school is unable to accept responsibility for such property.

SAFETY

1. Children should not present themselves at school earlier than 10 minutes before the session commences.
2. Pupils are not allowed to leave the premises during the lunch hour unless they are going home for dinner.
3. Early release from school only granted following a written request from the parent.
4. It is important for the school to know where parents can be contacted during school hours incase a child is taken ill or receives an injury.
5. Consent Form must be completed by parent prior to any child being allowed to participate in out of school activities organised by the school.

DINNER MONEY

Dinner money collected on the mornings of the first school day of the week and last day of the school week - normally Monday and Friday.

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BEN MERCY SCHOOL: CASE RECORD

First Visit: July 1985

CODE: Bf(J85)1

SCHOOL: Ben Mercy

DATE: 03/07/85

No. ON ROLE: 240

EQUIPMENT: 1 BBC + monitor + disk-drive (not on trolley because  
site split).

No. OF STAFF USING MICRO: 12 (total, though some use it much more  
than others).

AGE OF PUPILS using micro: All ages.

Questions.

The computer is used across the curriculum mostly.

The children work on the computer in small groups (usually about  
four). Also sometimes as a class, to introduce a new idea.

How much time do children spend on the computer?

Classes only get half-a-day per week, so most groups of children  
only get about half-an-hour a week.

How is the distribution of computer time between classes  
arranged? On a rota system.

CODE: Bf(J85)2

Where is the computer housed? Mobile between classes, in theory,  
but lives in a corridor between several classes much of the time  
because no trolley.

SOFTWARE: Includes "Adventure Island" (3rd Year Juniors - 10  
year olds); "Granny's Garden" (1st Year Juniors - 7-8 year  
olds); "L-Mathemagical" (4th Year Juniors - 11 year olds).

CODE: Bf(J85)3

The computer is used for:

Drill-and-practice programs (not much else for Infants),  
simulations, project stimulation, problem solving.

What do you/other teachers think of the software available?

Adventure games - very good: children really get absorbed -  
stimulates much creative work too.

CODE: Bf(J85)4

What in general do the pupils think of the computer?  
Very enthusiastic - disappointed if they can't use it.

What does the computer add (if anything) to the school?  
It can do things that teachers can't - e.g. the adventure games).

Does the computer in the classroom affect the teacher's teaching style? The 3rd Year Juniors not used to "following their noses" because of formal teaching - might have done better at "Adventure Island" if they'd been used to finding things out for themselves.

CODE: Bf(J85)6

Additions.

The Headteacher: one year's sabbatical - working on M.Ed. on computers in education - mostly interested in computer simulations - did case study work with "Adventure Island".

Good school to visit for adventure simulation work.

From Fieldnotes.

CODE: Bf1

DATE: Wednesday 13th November 1985

Arrived at 9.40 am. Saw Head in the staff room talking to one of the teachers - very busy. I waited until 10 am. Everything busy because the school photographer was there and all the people (mums and kids) locally were coming in for photos. The Head thinks it's a bit of a nuisance, but it brings the school funds of about £100 per year (on commission from the photos).

First had a chat with the Head in his room, about computers: 217 on roll - a fall - last year 240. The school is expecting lots of hardware very soon from the county: 2 BBCs and 2 monitors, 1 single disk-drive and 1 dual disk-drive (40/80 switchable), and 1 high resolution printer.

Then went along to the computer - situated in an "open corridor" near the classroom where the Welsh J2 teacher was intending to use a maths related program. But she wasn't ready to use it yet.

CODE: Bf2

Chat with Head continued:

The Headteacher went to the county offices and they agreed to give the school all this extra equipment (actually more than he asked for!) on condition that one of the teachers (the Head) would stay at the school until 5 pm so that other teachers from the area could visit and view programs etc. - in-service work. The Head intends to use the equipment for word processing - 2 Edword chips (1 Welsh, 1 English) and Logo (Welsh version - to test out).

At the moment the school uses:-

"Flowers of Crystal" (just started with a few of the Juniors). The Head isn't convinced of its value - the boys chosen to trial it had finished their work, so in a sense, the computer was used as a "reward". The Head wants to see what the kids get from it.

"Quest" - a database. The work started today.

Drill-and-practice programs.

"Dragons' World": an adventure simulation.

Computer not timetabled this year - as last - because teachers felt compelled to use it when it was their turn when it could have been put to more fruitful use with other groups at times (e.g. "Granny's Garden" - useful to have the micro for an extended period). Now teachers will request it and those with the strongest case will have it for that session.

CODE: Bf3

Teaching organized on project work this year - this is a new approach - this term, TRAVEL (all the Juniors), next term, FOOD (intend to use database), summer term, COLOURS. This arrangement (instigated by the Head) came about as a result of the "Adventure Island" work last year where it was discovered that "the kids weren't good at using their nouse" - project work, it is hoped, will encourage the children to "think for themselves rather than be spoon fed". "Formal" work takes place in the morning; project work in the afternoon.

Break-time: in the staff room. Welsh spoken, which I don't understand.

About 10-12 staff and 2 student teachers - there til Christmas.

After Break: with the Welsh 8 year olds - only about 10. Others - 9 year olds - with a student teacher. Two year group as fewer first language Welsh. These children had been working on co-ordinates and were using "Pirates" program to reinforce this work. The kids worked at the computer in 2s and 3s, taking turns. They have a grid in their books - guess a reference first (aim to find buried "treasure") then the computer tells them which direction to go in. They use this information

CODE: Bf4

to guess again - marking grid references with a dot each time, until they find the "treasure" - diamonds, pieces of eight, old coke cans etc. The treasure is the "reward".

The children seemed quite enthusiastic and wanted more goes - the teacher explained how to use the program first - I helped a few times.

It was basically a drill-and-practice program - not particularly impressive. The group worked quite well - taking it in turns - one boy was particularly fair - waiting for a "slow" girl.

A Welsh version of this program would have been used if there had been one available.

The teacher didn't seem particularly competent with the actual machine - and when she'd finished with the program, she asked: "should it just be turned off now?"

In this case the computer was just being used to reinforce.

After Dinner: no one using the computer to begin so I looked at a few programs with the Head: "Number Chaser" (ASK) and "Number Painter". The latter: an instructional-type program for maths

work - making numbers add up to a given total - against

CODE: Bf5

time. The Head said it had been "successful" - thought it was a good drill-and-practice program - 2 kids tried it - not particularly note-worthy - they enjoyed it though.

Then "Note Invaders" - another drill-and-practice program. The Head thinks it has everything such a program should have - especially approves of the return of the placing of the notes when an answer is wrong - rather than just "Wrong. Try again". 4 pupils used this program - 2 girls and 2 boys from the recorder group who couldn't read music. The program basically requires pupils to name notes. By the end of about 30 mins, the kids were quite quick at recognising notes on the scale (written). The Head asked, if I was a teacher, would I use the program? I felt like saying "no" - the program was unrelated to the sounds the notes made or the positioning of the fingers - but I said I'd think twice about using it at the back of a classroom (the kids made lots of noise - but the Head did think 4 was too many for the group).

After Break: the Head took the 3rd year Juniors and began the introduction to the database work to be used within next term's FOOD project. He talked

CODE: Bf6

about organizing data - preparing facts.

22 pupils (approx) in the class. About half girls/boys.

He asked, "what is the point of shortening words?"  
Lots of answers from the class: one example from the class "R.A.M." but the boy didn't know what it stood for.  
Answer wanted: because it uses up less memory.

Ended up with:

SNAME (surname)	Williams (but there might be 2 so need another question)
FNAME (forename)	John (but there might be 2 John Williams, so need another question)
AGE	10 (again, there might be 2)
CLASS	4 (there might be 2)
ADD (address)	
HT (height)	
WT (weight)	
SX	B/G?

There can be a total of 16 questions.

For homework, the kids were asked to come up with other suitable questions.

End of day. Left at 3.40 pm.

CODE: Bf7

Reflections:

Generally made to feel welcome - but felt I must be flexible - want to build a "good" relationship - not only with the Head but with the rest of the class teachers too.

All the teachers ate their Lunch in the staff room - as I did - unlike Longsight where, due to the Industrial Action, the teachers don't stay in school at Lunch time.

The Head said I could make use of any of the pupils at any time, if I need them (I don't think that's what I want - I want to observe/find out.

I think the database work should be interesting - I shall follow that. And it should be really interesting when all this hardware comes.

The Head definately thinks that there is a place for "good" drill-and-practice programs, in the more formal aspects of the curriculum.

I arranged to go in tomorrow afternoon - not morning as previously planned - it looks like drill-and-practice programs are generally used in the morning - more interesting things happen in the afternoon.

One other comment: one of the teachers remarked that she'd been "too busy with the new project-style of teaching to use the computer" (!).

CODE: Bf8

DATE: Thursday 14th November 1985.

Arrived at the school shortly before 1 pm. The Head informed me that he'd been trying to ring me this morning, but hadn't been able to get hold of me. I think he would have told me not to bother coming in as there wasn't much going on. However, as he couldn't contact me, he'd organized a group of boys to use the "Flowers Of Crystal" program.

The computer was wheeled from the Head's room (indicating that it hadn't been used that morning) to a small room (carpeted, with T.V.). Here I was left with a group of 9/10 year olds (Standard



3) boys, and "The Flowers of Crystal". These boys had read the story and this was the second time they'd used the program - they hadn't got far the first time.

It was interesting to see what they did. Basically they visited all the places (forest, city, lake, hills etc) but didn't really find out much. One boy dominated, keying in all the words. All were enthusiastic - lots of talk and argument about where to go and what to do. On one occasion they were given the

CODE: Bf9

message, something like, "to continue would be dangerous".

One asked "shall we go on?"

Another: "We might die"

A third: "That doesn't matter, we don't really die!".

They weren't at all afraid of any of the monsters either. They just rushed around without thinking, being "real men". For instance, in the Forest they ambled aimlessly even though I suggested they map out their positions - and I even drew a grid - but they were uninterested.

However, after I had suggested it several times, they did begin to plan, thinking about where they'd go before deciding what to carry. (We moved from this room to the usual position in the corridor as one class wanted the T.V.). Also, on my suggestion, they wrote down all the monsters/baddies that could be met and how they could be "beaten". More interesting things happened when they went to the factory and managed to get a pass for the city. They then had 4 towers to visit. They increasingly made more notes and planned ahead. They enthusiastically continued through Break (it was raining) and on afterwards until 3 pm - finding the special fertilizer and water.

Reflections.

I think this program does need some intervention from the teacher - to encourage

CODE: Bf10

making notes and planning. However, I do think their aimless wanderings were a useful lesson - they realized they weren't finding anything out.

The Head asked them lots of questions about what they'd done and what they think they'd achieved - they answered enthusiastically. The Head isn't convinced of the worth of the program (that's why only one group are using it). He also thinks 5 in a group is too many. Interestingly enough, he reckons that girls would handle it differently - being less adventurous and more methodical.

I think the "Flowers Of Crystal" could be a valuable program. The Head asked the boys to write about what they'd done and plan ahead for next week.

3 - 3.30 pm: Looked at some more programs with the Head: "Infant Letter" and "Infant Number" - drill-and-practice programs. The Head thinks they have a place.

"Front Page": a program for laying out the front page of a newspaper - pretty useful - much more so if there was a printer.

CODE: Bf11

I asked how the Head got and selected his software (there's about '300 worth). He said basically he begs, borrows or steals (not really): he has some demonstration programs, some acquisitions from his seconded year. The school has actually purchased few e.g. the music one I looked at yesterday ("Note Invaders"). He also reads magazines (Educational Computing, and M.A.P.E. magazine).

I arranged to come in next Wednesday afternoon when the database work will continue.

DATE: Tuesday 19th November 1985.

Phoned the Head to check that tomorrow's visit is okay - he said "yes". I told him I wasn't exactly sure what time I'd arrive as I'd be driving from Headland school. He said not to worry as the database lesson wouldn't start until 2.45 pm - possibly implying that not much else would be happening with the computer before that.

CODE: Bf12

DATE: Wednesday 20th November 1985.

Arrived at 12.45: talked with Head first. Returned M.A.P.E. magazine he lent me, "Micros and Maths in School" - a discussion paper by Fletcher "HMI".

He told me the plan for the afternoon: "Flowers of Crystal" (new group of girls) then database work ("Quest").

I helped manoeuvre the computer to the corridor

"Flowers of Crystal": 4 girls (Ni, Ch, De, and Sa). (I shall make some judgements and say they were "very nice middle class girls - bright too"). Head gave them a little chat first - asked them if they remembered the story - not well - and suggested they made detailed notes of what happened. Head popped back a few times during the session to see how things were

progressing.

First the girls read the story. I suggested they note down the items Rumala had hidden. They do this. The Head suggests it would be better if only one made notes. They discuss this and one is chosen.

They proceed with the adventure.

Basically, I thought it was a productive

CODE: Bf13

session - if not too long - until 2.30. Lots of co-operative decision making went on. Lots of pre-planning and thinking - e.g. - "If we want to go to the lake then we need the lie detector. To get that we need to go to the city. To go there we need a permit which we get from the factory and to go there we need a disguise kit." On several occasions they were thinking this much in advance, and on several occasions they tried to get to the lake again (they got there once, and passed the fibber, but they were unable to test the water as they did not have the water tester) but many attempts were unsuccessful due to the Blids etc. intervening. Lots of notes were made. The girls responded well to the noises and the graphics - some described as "scarey". I should have liked to have taped this session but I had not planned ahead so well myself - next time I'll take the recorder.

The contrast between this group of girls and last week's group of boys is quite remarkable: the boys just stormed ahead, not planning in advance. The girls were much more methodical and careful, though less adventurous - e.g. they decided not to continue when they were warned that it might be dangerous. The Head predicted this contrast between the girls and the boys as a similar thing had

CODE: Bf14

happened with "Adventure Island". He reckons it is in the nature of the girls to be more methodical. And he also added that more boys had had experience of computer games hence their non-excitement with the graphics. I think the Head does not put enough emphasis on the fact that these children are now 9/10 years old and have been socialized into reacting the way they do. How much does the school encourage "methodicalness" in girls and "adventurousness" in boys?

The girls worked through Break without realizing it. They were asked to write and draw cartoons of what happened.

After Break the computer was linked up to a T.V. screen in the

corridor area and J3 all congregated around the screen. Since last week's introductory database talk, questionnaires had been designed consisting of the following thirteen questions - SNAME, CNAME, DOB (date of birth), ADD(ress), SX, HT, WT, WST (waist), SHOE, B(reak)FAST, SNCK (snack), REGEX (regular exercise), BTIME.

CODE: Bf15

Each member of the class (24) had answered the questionnaire and this morning the Head had typed the data in. Some problems:-  
SHOE - size had to be in continental measurement else size 13 would appear bigger than 1.  
BTIME - bedtime converted to 24 hr clock

For this session the Head was interested to see how good the kids were at hypothesis forming.

He told them that they would have to learn some new words - e.g. QUERY, NIDENT (no identical).

First he printed out on the screen some of the questionnaires, then, prompted by the remarks from the children, two scattergrams were shown and explained/discussed (pupils were not familiar with scattergrams) - weight against shoe size, and weight against height. These were also shown as bar charts.

The children were interested and responsive throughout. Interestingly, when discussing the scattergram they constantly referred to the actual concrete examples of the children represented - e.g. - "There's Richard, at the top because he's the tallest".

Over the next few days the children were asked to think of the questions they have

CODE: Bf16

and differences which might need to be made when the whole school is given such a questionnaire.

After end of school: brief chat with Head about afternoon's work and about the Domesday Project - the school had not finished that - he thinks it was too adventurous a scheme - the one good thing coming from it being the increased numbers of disk-drives that schools in the county had bought.

Comments/Reflections:

Successful/worthwhile/interesting afternoon - getting more of a feel of the school - this "Flowers of Crystal" work and the data base stuff proving interesting. And things could really take off when all the new hardware arrives.

I asked what had been happening since my last visit (i.e. on Friday, Monday and Tuesday) and he said just some drill-and-practice programs were used.

I need to find out what programs are used in the school and how long the machine is used.

CODE: Bf17

DATE: Tuesday 26th November 1985.

The following message awaited me from the Ben Mercy Headteacher: "Arrangement for next Wednesday has to be cancelled due to Industrial Action. School closed next Thursday and Friday also because of occasional holidays."

CODE: Bf18

DATE: December 4th 1985.

The Head was in his office. He told me that he had collected all the new hardware from the county offices on Friday - 2 BBCs and monitors, one printer, one disk-drive, one dual disk-drive and and "Edword" chip (plugged into the computer on the right of the keys). Excellent. He said that not a great deal had been done since my last visit: some teachers were off school last Wednesday Thursday and Monday (Industrial Action). Some of the teachers had turned up and the Head had taken this opportunity to demonstrate some programs to them ("Viking England"). Since Friday the Head had been grappling with the printer - he can't get it to skip the perforations - I tried to help him but we could not manage it. He talked about how difficult it is to learn things from instruction books. There is also a problem with the plugs - the new computers are fitted with special plugs and he only has one adaptor so at the moment one computer is in the Welsh J3/4 classroom cupboard. The other is plugged in the Head's room; the third is on a trolley but not plugged in. It will obviously take some time to get all the things sorted out. He mentioned that the main use he saw for the printer was administration and "Quest". He did say for the word processing facilities to be worthwhile it would be helpful if children could quickly know their way around the keyboard.

I returned the Fletcher Discussion report.

CODE: Bf19

It was decided that it would not be worth visiting on the last Wednesday of term as there would be Christmas services, parties and such like, so my last visit this term will be next Wednesday.

Throughout this visit I did not do any taping because one group was welsh speaking and there were problems with the other.

J3/4: 18 first language Welsh pupils (9-10 year olds).

Male teacher

Program: Fernleaf: "Viking England 1: Raiders" (4 in the set). Interestingly enough, this teacher had not shown much interest in computers until shown this program by the Head - it fits in with the travel theme for the term. It was clear from the session that he had had lots of "goes" at the program himself, and had enjoyed it. He liked it because he had done well at it. This was also the class that had tried "Mary Rose" and not thought much of it, and abandoned it after a few weeks.

CODE: Bf20

The class had gone through the program for the first time yesterday. By the time I arrived, the first group (5 boys) were well into their go. Lots of discussion was going on, in Welsh (and English), although the program was in English. Their talk sounded thoughtful and unriotous. The class teacher offered advice, enthusiasm and humour off and on throughout. Each of the groups had a photocopied record sheet on which one member of the group recorded things like number of men, number of horses, number of boats, percentage of loot, lives lost, number of days left...

Basically, the program simulates a Viking raid on the English coast. It requires the pupils to make decisions concerning amount of food, where to raid, numbers of men to take... The idea is to collect loot and not loose men's lives. When the raiders return home, "The Thing" comments on their raid saying such things as "The community is very rich but there has been a serious loss of menfolk"; most groups got this message. Loot seemed more valuable than men.

The second group consisted of three boys and one girl. The girl justified her decisions well - e.g. - "Hide the boats well as one has been lost." and "We don't need many men to raid the monastery as monks won't fight back."

The third group was made up of one boy and two girls. The class teacher was very interested in how the

CODE: Bf21

children were getting on and reminded them to fill in the record

sheet. Apparently, he had managed to return home from a raid a "Hero!"

A bit of a problem about the number of horses - when equipment is loaded on the boats it is the number of horses per boat not the total.

I was pretty impressed with this program - like it did matter what decisions were made. The effects were not random e.g. - if, when tasks had to be listed in order, putting up defences was put low down, it took many days. Likewise (and this happened to me when I had a go during Break) if hiding boats is put too low down, they are stolen.

Just before Break the class teacher had a go himself and experimented with taking all or very few men on the raids. "The Thing" insists at least ten are taken, or left as guards.

Then I had a go during Break: it was going well, lots of loot and few lives lost, but one boat was stolen and I had to choose between men and loot. I chose men.

Whilst the groups were taking their turns others were writing up the record sheet.

Whilst this was going on, a group from another class was using "Note Invaders" with the recorder teacher. The Head says it really does teach them to read music.

CODE: Bf22

After Break: In the Head's room .  
"Quest", BBC, dual disk-drive, monitor and printer (MP 165).  
A group from J3.

First, four girls, but they did not seem to remember much about the work they had done with the files they had created. One girl was sent back to the class to find someone who did remember. She returned with a boy who remembered very well and then the others began to too. So a certain amount of refreshing took place first.

QUERY REGEX IDENT""

One of the girls does the typing in and uses the function keys too.

PRINT SNAME CNAME WT  
FORMAT 1  
OUTFILE LST:  
GO.

But problems, so this tried:

```
QUERY SNAME NIDENT""  
PRINT ALL  
GO.
```

But problem:- files are printed out and appear on the screen, but only up to a certain number - always comes up with "bad data" at the same point -

CODE: Bf23

about ten to twelve files will not be printed out. Several things are tried but no solution found. It will print out another file. Perhaps the disk had been damaged; perhaps something is wrong with the disk-drive or computer. Anyway, it is virtually 3.30 so the pupils return to their class. Disappointing, but these things do happen - computers are not infallible.

Throughout this time the Head had to keep popping out (to see Mums and respond to queries).

I stayed after school for about fifteen mins working with the Head to solve the problem, but gave up. We talked about the arrangements for next time and he lent me a newspaper article in "The Teacher" about computers in the curriculum.

Not an unsuccessful day. It is a shame the Quest thing did not work but these things happen.

Talked about the groups' work on the "Flower of Crystal". The Head knew the boys had done some class work on it, but he could not put his hand on it there and then.

CODE: Bf24

DATE: 10th December 1985.

Phone message from the Head: "School on strike again this Wednesday and Thursday". I shall ring next term to arrange further visits." I am disappointed really but it is out of my control.

CODE: Bf25

DATE: Tuesday 7th January 1986.

Phoned the school at about 11.15 and spoke to the Head. I asked him about visiting again, he said that was fine. He said he was leaving it for a couple of weeks before starting this term's project. I asked about visiting next Wednesday - he asked if I could leave it for another week, so I arranged to visit on Wednesday 22nd January.



DATE: Monday 20th January 1986.

Telephone message from the Head: Another strike on Wednesday but I can go in on Thursday instead. He said a group were working on "Tray"

CODE: Bf26

DATE: Thursday 23rd January 1986

Outline of Day.

12.50 - 1.05: Chat with Head

1.05 - 1.10: Looking at MEP "Airbrush"

1.10 - 2.00 and 2.15 - 2.30: Observing and taping group using "Tray"

2.00 - 2.15: With Head and J3 talking about their food survey.

2.30 - 2.45: Tea Break.

2.45 - 3.30: Observing and taping another "Tray" group.

3.30 - 3.40: Chat with Head about Logo.

12.50 - 1.05

Met Head in his office and talked. I gave him articles on "L Mathematical" and "Suburban Fox". I returned a couple of articles he had lent me last time. Also passed on Welsh version of Logo chip which he was very pleased to receive - had waited for it for ages.

Talked about next visits up to half-term: next Wednesday looks okay but it is likely that there will be another strike the following Wednesday. Also next Wednesday there is an internal language inspection so there will be about three inspectors there.

Apparently the Head had been very busy recently. The "Quest" survey was lost due to a damaged disk, so he has changed it some what. Later during the afternoon he has a short classroom session with it. Nothing more is being done with "Flowers of Crystal." Time has been spent getting into the food project, the topic for this term. He told me that J4 had been using "Tray" and I'd be able to see that this afternoon.

He then showed me some MEP programs he'd received recently. He had been experimenting with

CODE: Bf27

one of them called "Air Brush". With this program pictures can be drawn and coloured and then printed out. He'd done a tractor and printed it out. Also an addition to the "Front Page" program (for designing a newspaper cover) - this enabled three pages to be written - and the front page layout was different. The value of the printer with these programs was marked. However the Head

found the printer very slow.

He told me he had also been working with and familiarizing himself with the word processor.

At this point he left saying I could look at these programs whilst he set up the "Tray" program and group.

1.05 - 1.10

I had a quick look at "Air Brush" but did not have long enough to get much from it: there are new commands that need to be learnt.

1.10 - 2.30

Went along to the usual place in the corridor where the computer was placed and found a group of three boys and three girls using "Tray" (Ga, Ga, Ad, Cl, Sh and Em). They were very absorbed in what they were doing - lots of discussion and an air of business about them.

With the "Tray" program, a piece of text is typed in and appears on the screen in an incomplete form. There are various levels for this, at the lowest level just a few words are missing; at the highest level only the punctuation appears.

The Head had tried this program with children of most ages and most had got something from

CODE: Bf28

it, although it had originally been developed for used with remedial secondary aged pupils. He found there was one draw back - if the kids had got part way through working out the text and had to stop because of the end of the session or something, he had found no way of saving what they had done.

About the "Sketchpad" - this was not utilized because the class teacher did not know how to use it, although he did say he had spent time finding out about it so that it could be used. The children often asked about it because at times the message (words to the effect), "Why don't you use the Sketchpad?," appeared.

This group had had about three goes at "Tray" and clearly enjoyed it and found it challenging.

When the group began today's session all that appeared on the screen was the punctuation of the text. The text is revealed by buying letters (which lowers the jackpot score) or predicting letters or words (which increases the score). By the time I arrived a number of letters had been predicted and bought.

I shall not go into detail about what the pupils did as most of

the session was taped (TAPE No.4:Side A). The children were silent and whispered for a few minutes and then seemed to disregard the tape's presence.

-----  
NOTES ON TAPE.

TAPE No.4:Side A.

Counts: 000 - 660.

Fieldnotes: Bf27-32

Sound quality: good

Program: Tray: 6 J4 pupils

Good co-operation and thinking, very fair turn taking.

437: "It's too hard..."

"No it isn't. Look at what we've done so far..."

450ish: The group is stuck on "\_sin\_". They suggest they find the passage in the encyclopedia.

482: They are getting frustrated.

J4 teacher: "Go on you can do it... I won't send you to music."

Response: "Great!" (and they immediately apply themselves)

500: They get "using." But still haven't finished, stuck on "so\_in\_" (sowing)

525: They finish.

550: They are allowed to miss music and select another passage. They select one they had previously done. They remember a lot of it.

-----  
General Comments:

Tremendous amount of discussion and "hard" thinking. The group worked well together - nobody really dominated, or was left out. Of their

CODE: Bf29

own accord, the children took turns at the keyboard (moving the cursor around and so forth) they seemed a bright bunch and clearly enjoyed what they were doing. They asked if they could continue, although they did finish the text before Break. They did continue, missing their music lesson. This was regarded as a reward!

For the few minutes until Break, after they had finished the text, they were allowed to select an "easy" text which they had done before. Even though they had done it ten days previously they could do a lot of it from memory. The class teacher, who popped in and out quite often, commented that it's a shame they couldn't remember their tables so well.

THE TEXT (The Head copied this in from a book)

Nomadic tribesmen, who moved their cattle from one grazing to another, often found wheat and other cereals growing wild. They were a welcome addition to general diets of meat, fruit and berries. Dried in the sun or roasted, they tasted even better. Using sharpened stakes, then later, simple hoes, they began to cultivate their own crops. So important was the new source of food that at sowing time a human sacrifice was often made.

CODE: Bf30

Growing and harvesting his own food and storing it for the months ahead, can be regarded as one of the first and most important steps towards the civilization of man. (End of Text)

At the end of this session the class teacher talked about the tactics the pupils use to solve the problem - for example, buying the letter 'E' to begin then guessing 'THE' words. He said this group used good tactics which they had gained from experience. He suggested that it would be interesting to observe a group with less experience, who had had only one or two goes. And this is what I did after Break.

After Break:

Second group with "Tray" (two boys and four girls - another girl wanted to join them but was sent back to the classroom as the class teacher thought that six was the maximum). This group was much less experienced. They worked on the same passage, the work was taped. I don't think

CODE: Bf31

that they noticed the taping (batteries ran out part of the way through; I replaced them but must have missed five to ten minutes). See NOTES ON TAPE later.

This group, although less experienced, did use the same tactics as the more experienced group - e.g. they started by buying 'E'. The group worked less well as a whole - less co-operatively - it tended to be dominated by one of the boys (the other was very quiet). He did most of the typing in, though one girl did quite a bit too. These were the only two children who touched the keyboard, but all the children did work out letters and shouted them out when they had discovered a word/letter.

This group did not have as long as the other and they did not quite finish - the class teacher finished off the odd couple of words for them.

It was interesting that both groups had a problem with "using" - they had "\_sin\_" and couldn't figure out what word it could be.

In trying to help them I asked what they were doing with the computer, and one said "playing games"!!

Generally, they were very absorbed in the work and seemed to enjoy it. It was interesting that the boy who tried to dominate the proceedings by taking major control of the keyboard was shouted down on occasions - he suggested buying letters very quickly but was told not to by the others because it would loose points.

CODE: Bf32

The Head said it was interesting that at the moment the groups were concerned with scores - were in competition with other groups - by their own choice, yet he thought that that was a very minor aspect of the work.

-----  
NOTES ON TAPE

TAPE No.4:Side B.

Counts: 000-280.

Fieldnotes: Bf30-32

Program: Tray

Pupils: J4 2 boys and 4 girls - less experienced

Same passage as previous group.

Less co-operation - less turn taking on the keyboard - dominated by one boy (only one girl touched the keyboard). But they do work out the passage together - all offering suggestions. Lots of discussion. Girls notably more vocal than in previous group.

048: One girl says some one else should have a go now (at the keyboard) - but the boy does not give up his position.

Shows good strategy - predicting a letter and then buying it (doesn't cost anything if it is already in the text). But, the more letters predicted, the higher the score.

068: "It's about food, we're doing a project on food."

138: Batteries run out

138+: Voices sound different now - distorted earlier due to low batteries.

They get really excited at the end because they have nearly finished but the bell rings for the end of the day. They stay on later but have to stop.

243 approx: They have almost finished but are stuck on, "\_sin\_"

They ask for help from J4 teacher and me.

250: J4 Teacher: "What are they doing."

Pupil: They're cooking... no they're eating. They're doing food. They're...

J4T: What do they have in their hands?

P: Knives... cutlery...

J4T: What does this say?

P: Sharpened stakes.

J4T: What do they do with them?

P: Sharpen them.

J4T: No, they're already sharpened.

P: Flints!

P: Stick 'em in the ground.

J4T: Well, if they stick them in the ground, they're doing what with them?

P: Building a wall... ehh... ooh... building a house

J4T: I'm sorry we'll have to stop there.

P: No... oh no, we've got 299...

P: Well, what do they do with them?

P: You tell us what they do with them, then we'll try and guess what they do with them, and then...

ADB: What are you doing with the computer? You're...

P: Playing with it

J4T: No (laughs)

(all laugh)

J4T: What are you doing with it?

P: Typing.

P: Working with it.

J4T: No, yes. Another word for "working".

ADB: You're...

P: Ehh...

P: Using it.

P: Using

P: Yeah... oh yeah.

P: Predict. RETURN. Across, you wally...

270: "I want to do this I don't want to go home."

280: END

-----  
General Comments:

I found the "Tray" observation interesting. The children certainly found it challenging and showed eagerness in using it.

2 - 2.15: The Quest Survey "Lesson".

I left the tape running with the "Tray" group (actually the class teacher said that I'd hear on the tape that the children quizzed him when he appeared - asked him what the words were, but soon settled back to their own thinking when he didn't supply the answers). The Head called me into J3 - just off the passage where the computer was - because he was borrowing a few minutes from the class teacher to talk about the Quest Survey on food. A teacher directed discussion ensued: he asked about the survey/questionnaire they had begun last term, and they remembered very well. He asked what was the point of it: varied answers: "to find out how different we are and why". He then told them that he had changed the questionnaire somewhat.

CODE: Bf33

He asked who could remember the first question - very enthusiast response and good memory:

SNAME (they remembered both the shorthand and what it  
CNAME meant)

DOB

ADD

SX

CLASS

HT

WT

WST

BED

Up to this point the questions remained unchanged. The next was EX for exercise. It would be useful to find out how fit people are and how this relates to their size, weight, height and so on.

Then he asked: "how might someone's fitness be measured?" Varied answers. They talked about exercise and how it makes your heart beat faster - so pulse rate could be measured, or panting. He left them to think over this question: "How might we find out big a person's lungs are?"

It was only a short session to remind them of the work done last term. It worked well - a very enthusiastic response.

3.30 - 3.40: Short chat with head before leaving. He said he hoped to do some more sessions relating to the Quest questionnaire by my next visit.

He said he thought he'd start the Welsh

CODE: Bf34

Logo work with the Infants (as seen at Manchester Mf(J85)1-4). He thought he'd ask the advisers when they come next Wednesday what they would like to see done with the Welsh Logo as it was hoped that this would develop language and they are language advisers.

He also talked about his work with the Welsh language primary teacher trainers at the University - he will be there tomorrow working with them and said he'd probably pop in - possibly to borrow the MEP stuff on Logo.

It was a good worthwhile afternoon. Good discussion taped too.

DATE: Tuesday 28th January 1986

Telephone message from Head: not to go to Ben Mercy tomorrow, Thursday instead.

I phoned him on Wednesday at 8.50am. He said that if it was convenient for me, could I visit on Thursday as the J3 teacher would find it more convenient. This is because on Wednesday afternoons half the class go to music lessons and she likes to use this time to do more individual work with the other half. I agreed to this arrangement.

He also said that he was disappointed because the new Welsh Logo chip that I had left him isn't working. But he's contacted a computer man at the University and he is going to try to fix it. He wanted to show the Welsh Logo work to the language advisers



who come today.

CODE: Bf35

DATE: Thursday 30th January 1986

Arrived at 12.55 and met the Head who was just finishing a meeting about the implications of yesterday's visit by the Welsh language advisers.

He joined me at 1.10pm and we talked until 1.45pm. Basically it seems the Authority wants to introduce total teaching through the medium of Welsh with the rising five age group. Talked further about Welsh language.

The Quest Work: The questionnaire has now been reformatted and the Head has tried it out with three boys. More work was done with this in the afternoon.

I asked him about the attitude scale - if I could give it to J3 and J4 - he had a brief look at it (and kept a copy) and said it was fine, as long as I let him see any results. He asked how I would do it - I said I'd

CODE: Bf36

like to borrow the class for 15 minutes or so and go through it statement by statement (as the Longsight experience had seemed to show that this worked best). He seemed to think this was best too but wondered if the answers might be influenced by others - I said I would try to emphasize that there were no right or wrong answers. He thought that was fine particularly as J3 were used to thinking for themselves. He also commented on how interesting it would be to see if there were any sex differences. I will do the attitude scale next time I visit.

1.45 - 2.30 pm: J3 class with the Head.

The computer is set up at the back of the classroom (but after the afternoon, the class teacher requested its removal to the corridor as more space was needed in the class and she found it a distraction/disruption).

He asked for the three boys who had helped him earlier. The class teacher selected three girls. The six children and the Head and I went to the computer at the back of the class. He then organized

CODE: Bf37

the children: the three boys at the computer typing in the data, reading it out and checking it; the three girls measuring and completing the forms - one acting as clerk and filling in the forms.

He explained the abbreviations for the months:  
JY,FY,MH,AL,MY,JE,JL,AT,SR,OR,NR,DR.

The address: if the subject lived in B. it need not be written down. A few other points about addresses were made.

The bedtime will be written using the 24 hour clock. The head briefly explained this.

The two fitness tests: BUBBLE: lung capacity - blowing into water through a tube: timed.  
STEP UP: Up and down on a chair for 1 minute and pulse checked after.

It was also decided to measure weight and height barefoot.

One of the three boys was the first subject. Main problem finding the pulse. This was too difficult. The test had to be changed. One girl suggested counting puffs but problems were foreseen in the counting and the prevention of cheating. It was decided to do the bubble test first, then the step up exercise and then the bubble test again. The children

CODE: Bf38

had great delight in doing these tests.

It was also decided to round weight down to nearest kg.

Before Break the three boys had completed their questionnaire.

2.45 - 3.20pm: Continued work with Quest.  
The three girls completed their forms. When the girl acting as clerk was being measured one of the boys took over her job. He then wanted to do more measuring but was quickly rebuked:  
"The clerk doesn't do that - he just writes things down". (said one of the girls).

The time was measured in seconds using a watch but later a stopwatch was used.

Comments:

The Head hoped I had got something from the afternoon. The computer was not the centre of things - "it was being used simply as a tool just as you might use a ruler as a useful tool" said the Head. The children really seemed to be carrying out an investigation. They were very

CODE: Bf39

enthusiastic and excited. They were learning all sorts of things: form filling, measuring, accuracy, amongst other things. Using Quest is an interesting computer application.

3.20 - 3.30 : Chat with Head.

He has put a typewriter in J4 to help familiarize the pupils with the keyboard as a preliminary to word processing - he thinks that if they find typing too laborious then they won't benefit from word processing. When the class has become familiar with the keyboard he plans too put the computer in J4 for word processing - using "Edword".

He also spoke about the industrial action: he's been badly hit because the staff are in several different unions and it only takes one teacher to go on strike for all the kids to have to stay away because of lack of playground coverage.

He talked about the Welsh language versions of programs: many Gwynedd teachers don't hear of new programs until they have been translated. This takes time and usually the easier ones (drill-and-practice) are first translated because they are shorter. Welsh Logo might change this.

CODE: Bf40

Further comment:

This must be the first time I have observed computer use where the micro is not the centre of attention or work. This isn't a bad thing. The children were using the computer for their own ends - storing information - rather than learning from it, or it tutoring or drilling them. It's full value will be seen when the data is analysed. I wonder if such work would have taken place had it not been for the computer. Analyses would certainly been infinitely more difficult, and less rewarding, and more time consuming (inauthentic labour).

Lent the Head the MEP Logo pack.

CODE: Bf41

DATE: Thursday 6th February 1986

Arrived shortly after 1pm.

Outline of Visit.

1 - 1.10: chat with Head.

1.15 - 1.40: attitude scale with J4.

1.40 - 2.30: Quest filing with J3.

2.30 - 2.45: Break.

2.45 - 3.10: attitude scale with J3.

3.10 - 3.20: Quest filing.

3.20 - 3.50: chat with Head.

1 - 1.10: Chat with Head:

Talked about the previous week - not a great deal has been going on with the kids as so much strike action - but things have been going on with teachers. The Head uses the strike action - when the kids are away - to spent time working with the teachers, showing them computer applications - in-service work. Because a strike was on this morning, he had done some work with the Infants' teachers. He thinks their attitude has

CODE: Bf42

changed: "They weren't too favourably disposed to the computer to begin, but now they're interested in what it has to offer". He had shown them an infants word processing package, which gave a large print-out. He thinks it would be very good to get the infants word processing. He believes that the infants should come to the Junior stage with keyboard skills. With infants, who can't write quickly, they will not be frustrated by slow typing skills. But gradually the typing skills should improve, so that by the time they reach junior age they should not be frustrated by slowness. The infants have also used "Paintbox", which is proving to be a "good little program" - it has shown its worth with the top Juniors too (according to the Head). He thinks programs are good if they can be used across age ranges.

Whilst chatting with the Head, a J3 boy was sent to ask if I was coming today. The Head commented that

CODE: Bf43

I'd been accepted as one of the "family" now.

1.15 - 1.40: Attitude scale with J4.

J4 teacher said that it was convenient to do the attitude scale right away, so I did. I took the class for about 20 mins - talked about wanting to find out what they thought about the computer in school. Told them there were no right or wrong answers and explained how to fill in the questionnaires. I also said I was interested in their own opinions, so it wouldn't be worth looking at a neighbour's answers. I then handed out the sheets and read out the first statement. After this, different pupils took turns to read out statements. When it was completed, I collected them in. Some asked if they could put their names on the paper - I said it was not necessary - I didn't need to know their names.

I returned to J3 and found them working on the Quest filing, with the Head.

CODE: Bf44

1.40 - 2.30: Quest filing with J3.

The Head had set the children going before I went off to J4. One of the clerk girls was used to train another 2 girls (another girl joined them later). After she had done this, she became a "trainee" computer-typer-in-of-files. One of the boys instructed her.

The girls were busy filling-in forms - usually when they got to the exercise and bubble-blowing, another girl started on the next client - filling in his/her details. The system worked well and the girls clearly enjoyed their work. The completed questionnaires were passed on to the computer typist, who typed in the files. The Head commented that the whole business was going to take much longer than he had anticipated: there was no way data could be gathered on the whole school. He also said that he had been talking to the J3 teacher who had commented that there isn't enough time in the day. The food project had really taken off, said the Head, like no other, and it was a shame that time didn't allow some interesting paths to be followed up and work finished. The displayed work on food does seem impressive (project work is usually done in the afternoon - makes for a flexible timetable; I get the impression that basic skills work is done in the mornings - in fact, when I went along to J4, the kids were about to start

CODE: Bf45

work on their Nuffield maths - not food-project work).

The Head remarked on the incidental learning taking place with the Quest work. The children learn the importance of accuracy - e.g. the date of birth has to be written consistently - day of month, month of year: on one occasion, the month was written before the day and this had had to be corrected. The Head was surprised at the speed of the pupils' ability to use the 24-hour clock - they didn't know about it before, but this questionnaire demands that the bedtime is written in the 24-hour clock form - the children needed to know how to do this, so learnt about it almost by themselves - he just said a few words about it and wrote a note that 6 O'clock equalled 18.00. Now the children can write 9.30pm as 21.30 with no trouble. He commented that children dealt with co-ordinate very easily after working with "Adventure Island". Yet he remarked, that in the past, he'd spent hours trying to teach the children about the 24-hour clock and co-ordinates and it had taken ages for it to sink in. With the Quest filing the children had also learnt about weighing measuring and timing too. The Head really didn't think that such work would have been done without the computer (others, however, think that just an investigation is not computer dependent. I think it is not dependent, but is a spark - or stimulates

CODE: Bf46

such work, and later, cuts down on inauthentic labour).

The girls acting as clerks are also learning to expect certain answers - one client (female) blew bubbles for an unusually long time after the exercise - they thought the results looked wrong - in fact what had happened was the timing for the second blowing had been missed and by the time they had organized the timing again, the client had recovered her breath. In this instance it was decided that the client should complete the whole exercise again. This time the results were more as expected.

Work continued on this until Break-time.

2.45 - 3.10 pm: Attitude scale with J3.  
Same procedure as with J4. The kids seemed quite happy to fill out the form.

3.10 - 3.20 pm: Quest Filing.  
Actually before Break a problem with the quest work was discovered - the writing in the file disappears when it reaches mid screen. During Break the head transferred all the data onto another disk. He thinks it is something to do with the tracking - 40 tracks on 80 mode. But transferring it onto another disk didn't fix it. He eventually decided to start from

CODE: Bf47

scratch with a fresh disk and type it all in again - about 18 files to date - after school.

Other points:  
The form filing clerks enjoy their work apparantly. So do the clients. The clerks select the next client - "you're next" - response - big smiles.

A typewriter has been placed in J4 and they have been using it. I was shown examples of typed pieces.

There are three computers in the school - one set up in the Quest classroom (J3), one in the corridor, and one in the Head's room.

3.20 - 3.50 pm: Chat with Head.  
Further discussion about the Quest problem - I couldn't help him.

I shall not visit next week because of half-term.

We also talked about other programs:

CODE: Bf48

"Flowers of Crystal": The Head said he wouldn't buy it. He doesn't think that it is particularly good. (He also said that he wouldn't buy "Dragons' World"). About "Flowers of Crystal" he said that one criticism is that it is not possible to stop the program and save the pupils' position. He also felt that children can get caught up in a circle - going to the city, to the lake and back to the centre, for example - he thinks that this can be frustrating for them.

"Suburban Fox": He's heard a lot about this one and thinks that it sounds really good and would like to get hold of it.

We also talked about his future. He'd like to become an adviser. He loves visiting other schools.

CODE: Bf49

Other Points:

Once again, the computer itself wasn't the centre of things - not necessarily a bad thing - I did notice that another younger group was using the computer in the corridor, on my way back from J4 and the attitude scale.

CODE: Bf50

DATE: Thursday 20th February 1986

Arrived shortly before 1pm. Talked to Head for 10 mins before going to J3. The Head said that his "Number Paint" program had been vandalized - 2 boys had removed the protective sticker and deleted the program. It was the first experience of such vandalism - the boys were from J4. He would very much like a new copy. He also returned the MEP Logo pack.

He showed me a data manipulation program he'd discovered: "Display Data" (MEP). It prints out pie charts, bar graphs, windmill flowers. He collected data from the J4 class about what they ate for breakfast and he displayed it in the different forms. He seemed pleased with this program - easy to use and good results - but he wished he had a colour printer.

Note: current location of the 3 micros: one based in the Head's office, one in the corridor (moved out of J3) and the other now in the infants. Two of these computers came from the LEA deal.

CODE: Bf51

One of the Infants' teachers (5 and 6 year olds) expressed the desire to use the computer - she knew which disks she wanted to try. Apparently the infants have not used the computer much before. But unfortunately this teacher didn't get the

opportunity to use it today because another infants teacher was using it and also a group was cooking in the same area. This means that all three machines were used during the afternoon.

1.25: J3 and Quest.

The Head led the proceedings. A student teacher assisted. The whole class was divided into the following groups:-

One group: 4 boys studying bedtime data.

Another group: finishing, sampling the three in the class who hadn't been measured.

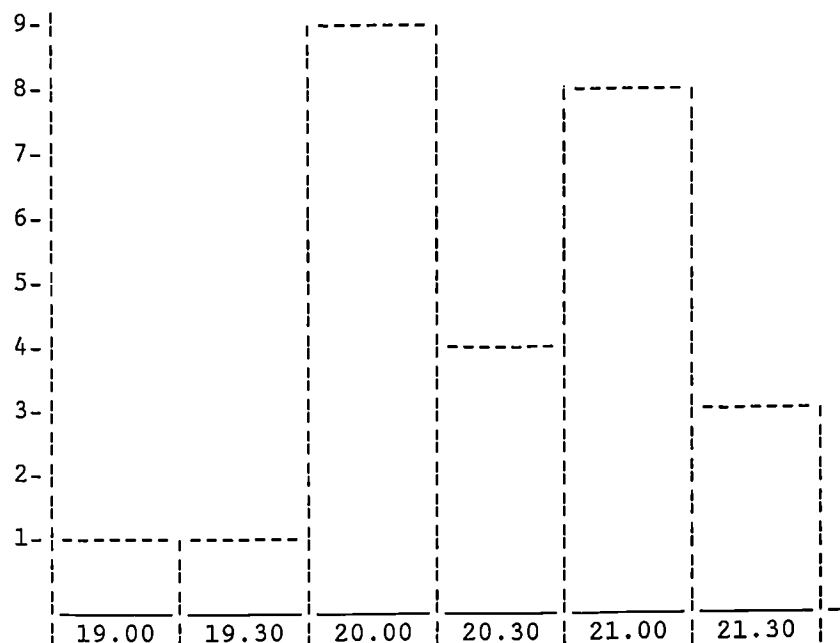
Two other groups, one male one female: studying the data and raising questions.

The class is very lively and keen. When volunteers are asked for, all hands go up. No stopping these.

The boys who studied the bedtime data first made a tally of the data. This had to be repeated as the numbers didn't match: 26 in the class and 27 items of data!

CODE: Bf52

When they had got this right and discovered the earliest and latest bedtime, they went along to the Head's office, put the data in and produced a bar chart:-



They were asked to comment on the graph.

Owen's Theory: Those who go to bed early do better in class than those who go to bed late and are tired.

The Head was quite impressed with this theory. It is followed up



later.

They are asked to write up what they did.

The groups working on raising questions about the data were busy. It was interesting to note that they were not raising comparison questions, rather, questions about each category, e.g. "who is the tallest?" rather than, "are girls taller than boys?" (relationship between sex and height). However, one boy did ask a comparison question about the relationship between weight and walking to school.

CODE: Bf53

After Break:- the class back together again. The Head led the proceedings.

The class looks at the bar chart put together by the four boys and the Head asks for comments on the results:-

"Most go to bed at eight".

He asks what's interesting or unusual about the graph. He shows them, in very simplistic terms, the "normal" distribution.

Eventually he finds the answer to his question namely that surprisingly few go to bed at 20.30 - if it was a "normal" curve then most might go to bed then. He asks for explanations - maybe there is a good T.V. programme on then. Bedtime and television is investigated further. Some watch television in bed. Does going to bed mean going to sleep? As an aside it is found out that:-

12 have T.V.s in their bedroom

4 have colour T.V.s!

17 have computers at home and

12 have videos.

(Perhaps this shows the wealth of the community).

Owen's Theory is discussed: How might his hypothesis be tested?

Yawning is no good - not practical; what about a timed test?

Objections to this - some work slowly anyway. Owen was told to think again about it and see if he could come up with an unobjectionable test. The class was aware that this wouldn't be easy.

CODE: Bf54

It was decided that a group of 4 should further investigate bedtimes. Many volunteers but the Head said he would have to think about the group.

He also pointed out that it might have been quicker to ask the class "who goes to bed at 8?" and so on, rather than use a computer, but computers are very useful for dealing with more data and more people. J4 are going to be sampled too.

Other comments: I talked to the Head at the end of the day for a few mins - I remarked upon the class' enthusiasm. He said there was no holding them back - it was bad teaching if that class are sitting quietly. He also said that he thought a lot had been achieved that afternoon - they hadn't been sitting working out of a book, they had been actively involved in different things - they had been forming hypotheses. The micro had played a minor role, but prompted the work.

Generally quite a worthwhile visit - more from the point of view of observing group work. I didn't spend much time with the computer.

CODE: Bf55

No visit made on the 27th February as had been arranged as the Head phoned to tell me of another strike (and he has been off with 'flu).

DATE: Thursday 6th March 1986.

I arrived at 1 pm. Chatted with the Head - lent him a copy of "Number Painter" and arranged to see it in action next week. I also gave him a copy of the Welsh Office report and promised to lend him "Grass" (a database package). He said not a great deal had been happening - he had been away ill.

The infants have got into using the computer. He said that not much further work had been going on with Quest because, apparently, the teacher trainer needs to do her class work, and Quest caused some disruption.

CODE: Bf56

Not a great deal was going on this afternoon, so I spent the rest of the time observing John using "Flowers of Crystal". John sprained his wrist two days ago and so has been using the computer since then as he cannot write. He has been typing in some BASIC program from a book (I can't see the point, but the Head did say that it emphasized the important of being accurate and copying exactly).

The computer was in the usual place in the corridor. I observed John using "Flowers of Crystal" - some others joined after Break. Apparently, Mr.J4 has been sending others down to join John and now about 18 have had a go. John has spent some considerable time on it and had located the fertilizer and special water. Whilst I observed, he collected these and also found the soil and, with some advice from me, managed to locate the gold pot. The class teacher had suggested that they need to plan and make notes but he said generally the class was too confident to bother. On questioning, John could clearly have

benefitted from making notes as he did not remember certain things. My questioning helped

CODE: Bf57

clarify this thoughts and guide him.

I did feel that this program wasn't being used as well as it might - partly used as something for John to do - not part of a project or anything. Also, he had had a go at Part 2 without finishing Part 1 but had not got much from that. He was, however, familiar with the story and responded to the graphics. He really didn't want to get "eaten" or "killed". Also, he planned missions though not as successfully as he might since he didn't make notes.

I don't know what else I can say. I did perhaps guide him a little too much and helped with the drawing of the grid for the forest.

It's interesting that the Head doesn't think much of the program - he doesn't like it because the children aren't able to save their position.

A Tactical Note: it seems that it is easy to under use going back to the centre - John didn't realize that he could go there at any point - he thought that you only started there.

CODE: Bf58

General Comments:

Using computers does have its problems - recently the Head has had several problems with the hardware. Things like the printer take some getting used to - it would be really valuable to have someone around to show you how things work.

And more potentially rewarding programs do require some amount of planning to get the best from them. For this reason simple instructional programs can appear very attractive to the teacher - very little thinking is involved - probably, if you thought too much you wouldn't use them!

Anyway, next week I shall see "Number Painter" being used. The Head says it is a very simple program, but has been used successfully with all Juniors.

No further headway with Welsh Logo or word processing (that's a shame - but it's largely a question of time).

CODE: Bf59

DATE: Thursday 13th March 1986.

Arrived at about 1 pm.

As suggested last week, I went along to the computer with "Number Painter" - 3 (2 boys + 1 girl - bright) from J1 came along - 7/8 year olds. It was thought that I could see J1 and J4 working with the program, but the (replacement) program wouldn't work. Disappointing.

The Head then went to his office to find some programs to use with these children. He came back with several - one disk of MEP primer programs (he didn't rate these highly, but thought they'd suit the age). Some on the disk ("Time") I've seen used at other schools.

The Group: A, S & L.

"Anagram": concerned with the shape of words. Quickly proved to be too easy. Went on to another program.

"Burglar": series of questions. Children arrive at the number required - combination for a safe supposedly. They type in a number - response: too high/too low. No graphics at all. Not good.

CODE: Bf60.

"Wordworm": a worm eating letters to make a given word, and growing as it does so. The children didn't particularly like this - not challenging but not easy to control the worm.

Another disk:

CASTC: castell myrddin (Welsh).

CTOD: for reading cassette to disk.

!BOOT: boot program.

FRPAGE: front page: (word processing).

MENU: menu program.

NIN: faulty program.

NINES: patterns with multiples of 9.

TRANS:

LEAF: utility program for making data files

DEETREE: as above.

FRONTP: front page.

CASTLE: "adventure" - exploring imaginary castle.

JUMB01: Infants program: loading an elephant on to a lorry.

MARSH: Moving from A to B, avoiding pools.

"Marsh": "keep you feet dry". Hidden pools.

2.10 - 2.30: taping (started part way through first attempt).

They found this program quite challenging. Basic fault - element of guessing involved - information given can help you decide where to move (N, S, E, or W).

They had several attempts at this and returned to it after looking at other programs, and actually managed to get the "man" safely to the "hut". The Head said that he'd never succeeded.

CODE: Bf61.

Quite good discussion and co-operative work; discussing where to go next.

"Castle": They explored this program but not in any great depth. Probably too difficult for them, but also we didn't know exactly what to do (I hadn't read the notes). But they got enough from it to want to continue exploring during Break.

This program seemed a bit like "L" - but they were told what to find. If they had continued it for longer, one of the problems they would have encountered would be deciding, what to drop and what to continue to carry.

-----  
NOTES ON TAPE:

TAPE No.6:Side A.

Counts: 215 - 490.

Fieldnotes: Bf60-61

Program: "Marsh" & "Castle" (MEP).

Pupils: A, S & L (1 girl + 2 boys): J1.

"Marsh": Taping started part way through first attempt.

Aim: to direct "man" to hut, avoiding swamp and trees.

Dangers unknown, but information can help decide which way to go.

Fault: element of guessing.

222: Start.

Lively, chatty group. Things like "go East... East"

"No, South.."

"Go down, go down..."

367: They get tired of this and want to try something else.

They have a go at "Castle".

Time spent reading through the instructions. But they are aware of the lack of time. They are keen to write down where they are going. On my suggestion, they draw a plan - saves time - quicker than writing down.

Good discussion.

They end that turn - bell rings.

-----  
When I came back after Break, they had got bored with the program and wanted to look at something else.

"Jumbol": Although an Infants program, they had great pleasure in loading the elephant into the lorry using a crane - graphics were good. All three had a go at this.

"Nines": Couldn't really work out how to do this one. To do with getting points for making patterns with multiples of 9.

Returned to "Marsh".

CODE: Bf62.

That was basically it. Not very interesting really - it did show that children bore quickly of programs that are not challenging enough (but on the other hand, I had not read the notes to go with the program).

Talk with the Head:

I had the opportunity, off and on, during the afternoon to talk to the Head and at some length after school, until 4.30pm. He made several interesting comments (Head's opinion):-

(1) The emphasis in this county is on the translation of programs into Welsh - this has several implications: the time lag - the schools are that much later getting hold of the programs; simple program are easier to translate, but quite often not so educationally justifiable. Also, some problems with commercial programs that are translated - the firm will only use them if they are financially justifiable - but they are not usually. Also, it seems that the schools don't get to hear about what programs are available until they are translated - active policy to promote the Welsh language.

Most of the local MEP funds have gone into translation, but only 35% of schools in Gwynedd have pupils that are fully bilingual - most of these in rural areas where they are less likely to be favourably inclined to the computer anyway.

CODE: Bf63

(2) The Head wouldn't be surprised if in most schools the computers aren't used much in the future - and the Ludites will say "told you so", but it wouldn't be the teachers' fault entirely; they've largely been presented with "bad" programs and initially a cassette-recorder rather than a disk-drive! They've had very little in-service training - it is not surprising they are disillusioned.

(3) This county lags behind other counties. Partly, because of Welsh language priority, but also because there is only one adviser responsible for primary and secondary maths and computing. He's got no time to do all things. Apart from that there is D. Price who (according to the Head) does lots of

translation of programs, and J. Prince who distributes and evaluates secondary programs.

Really, he reckons, what is needed is some kind of primary computer liason/adviser person - to evaluate and distribute "good" software and visit schools. He'd like such a job..

CODE: Bf64.

(4) He also talked about other teachers in the school. The Junior teacher for the Welsh class, although having used "Mary Rose" and "Viking England" (mainly because he got a good score when looking at it!) "really isn't keen on them - he's more concerned with poetry and playing the fiddle and a 'machine' doesn't fit into his life attitude". And there is nothing the Head can say that will change his attitude. It is really narrow-minded since a thoughtful person might take the computer on board and use it in promoting their own aims.

(5) The Head thinks the future looks pretty depressing. Much more in-service training is needed. And also the new teachers to the profession should be familiar with computers - but little seems to be taught about computers on many present PGCE courses.

(6) The Head also talked a lot about the MEP. Maybe it hasn't achieved a great deal - but he wonders what would have happened without them. Also, MEP concentrated on writing their own programs because what was available at the time was so bad, but when some good programs

CODE: Bf65

were produced MEP didn't give them credit. Also, MEP have produced a lot of "rubbish". But the MEP effectively ceases this month.

(7) The Head reckons there need to be more centres like Ben Mercy where teachers can go and see what is available. I asked if he thought much would be going on if it wasn't for him - he doubted it - teachers don't have the time. He said, "if it was left to the teachers, they wouldn't discover anything new or keep up to date, they'd just use the odd program they had found and liked. The future doesn't look too bright. But even I can't even keep up to date (he hasn't had time to do much with word processing, Welsh Logo or more Quest work recently) - it's a full time job".

CODE: Bf66

DATE: Thursday 20th March 1986.

Arrived at 1pm. Had a chat with the Head. No more has been done with the Quest work - not a great deal has been happening - last week of term and all that.

Tried loading a fresh copy of "Number Painter" - on each of the 3 computers:- Wouldn't load on the one in the Head's office. Wouldn't load on the one in the corridor. It did load on the one in the Infants department!

The Head reckons the econet chip messes it up. The third one tried was the only one without that chip. He left it loaded on the computer in the room in the Infants area (carpeted, cooker and T.V. and computer on trolley). He then brought 3 J1 children to me to use the program.

"Number Painter": A number is given as a target to reach; and also a starting number. The "man" is driven about the screen, collecting numbers to make the target number (+ no.s, - no.s, and later - no.s and x no.s.). If two, or all three men successfully reach the target, the child moves up to the next level where the target numbers are bigger and there are gaps on the planks too.

CODE: Bf67

There is a time limit - not seconds ticking away, rather a weight is drawn up and when it reaches the top, the turn ends.

Screen Display: (without weight ascending, measuring time - displayed to the right of the screen).

TARGET NUMBER: ...

TOTAL: ...

+4

+5

-7

	-		-		-
	-		-		-
	-	+2	-	-3	-5
	-		-		-
	-		-		-
+6	-		-		+2
	-		-		-
	-		-		-
	-	-5	-	+3	-4
	-		-		-
	-		-		-
-----	-	+2	-	+3	-----
MEN	-		-		MEN



The man is directed about the screen using the z, x, : and / keys. When a number is wanted, the space bar is pressed. Another number then appears else where on the screen.

The graphics are good and the Head reckons the children have to think quite hard: there are no ls so often it is necessary go above the target and then take away. He thinks it is a good drill program - one that has been used successfully with all the Juniors. He thought it would be good to see a group of J1 and a group of J4 pupils using it. This is what I did.

CODE: Bf68

First Group: lish til Break (2.30): P, A & L (3 boys): J1. Photos taken, but no taping, although I set it up, because they just didn't say anything - they each had their own independent go. (Not a good program to delelop language skills - at least not with this group!).

P. had a go first: very adept at using the keys - pretty bright. He had had about 3 previous goes. He reached level 6, working independently, very well. But no communication with others.

A. - 2 previous goes. Not as good as P. but still reached level 5.

L. - only one previous go. Pretty good though - with some help (from P.) reached level 6.

This took them until 2.20pm. For the last 10 mins I let them have a go at a man each until Break at 2.30.

After Break: Second Group: H. & C. (2 girls): J4. Two "shy" ones (according to their class teacher). Apparently, they are somewhat "afraid" of the computer and indeed they did seem nervous (I wondered if I had seen representative groups on previous occasions). It was interesting - they weren't so good - not so dextrous with their fingers as the J1 group. And they needed a lot of encouragement too.

C. had a go first and reached level 4.

CODE: Bf69

H. had the next go and reached level 6 - with some helpful suggestions from me. Although they did seem pretty nervous, after some positive encouragement and some "laughs" they began to relax and enjoy what they were doing.

General Comments:

Location of Computers: 1 on trolley in infants area; 1 in Jumior

corridor and the third in the Head's office with the printer (used for administration and looking through software and small group work).

At the end of the day said a few words to the Head - I intend to visit about once or twice next term, to see what is going on. He said he'd miss my visits.

Not a particularly eventful visit today - but it is good to see what the teachers find useful. All the Junior teachers find "Number Painter" useful and think "it makes the children use their brains". I think it's basically a drill program but the children see it as a game, so are generally keen to use it.

Apparently not a great deal had been going on during the week: the last week of term. He hopes to follow up the "Quest" work next term. A new project for the school on COLOURS will begin but won't be rigid because teachers want to finish the food project.

CODE: Bf70

He said the food project had gone down, and worked, well.

CODE: Bf71

DATE: Thursday 19th June 1986.

Arrived at 1 pm. The Head greeted me.

1 - 1.45: Chatted with the Head in his office. General chat about what has been going on since my last visit:-

In The School:

"Granny's Garden" with one class.

"Dragon World" with two classes - one Welsh.

"L Mathemagical" with the top Junior class - no one has cracked it yet - the class teacher is very keen on it.

Word processing (Edword) with J1.

Welsh Logo: Looking for faults - wants to get in touch with John Cunliffe because he can't find his book with suggestions about what to do - particularly with language promotion in mind.

Edword: J1 working on this - more familiarization at the moment. If they have written a good poem, they are allowed to type it out on the word processor - presentation in mind. He lets them type it straight out, then he talks to them about how it might be improved visually - e.g. bold type, some words in capitals for emphasis, e.g. CRASH and such like. They keep one final copy for their class book and one to take home.

CODE: Bf72

County Wide:

Since MEP has finished and the MESU has taken over, Gwynedd has more funds - the Welsh Office have put up some money. Gwynedd's plan at the moment is to set up Centre schools, about 12. These will receive funds to buy extra equipment, hard and software, like Ben Mercy, which will be one of these schools.

These schools will probably be able to arrange in-service work for other local schools. At a meeting, it was suggested that equipment could be borrowed, but this was thought to be a bad idea. The Head reckoned that if that did happen, by the end of the year he'd have little left.

These Centre schools could support other schools by providing help and advise and access to their equipment - e.g. printers. At Mysynla (old MEP regional centre), D. Price will become the primary computer adviser. Another person will take on secondary level.

Welsh Edword is being developed - scale 2 post for that: the person would develop resource material for Welsh Edword (now on offer on chip at £10 - English version £46!) and Welsh Logo - but because Welsh Edword offers greater language development possibilities, Welsh Logo is now of only secondary interest.

CODE: Bf73.

So Gwynedd's computer situation is improving, but in this county, language policy has priority. The Head reported that the HMIs had looked into Welsh in the Holyhead area primary schools and had decided that "the concentration has, for a long time, been with maths and computing". Two points: (1) they call that concentration! (2) what about micros and language development?

Back to the school:

This term's project - on colour - seems to be going well.

We talked about the number of computers a primary school needs. He said that 3 is enough for a school of this size (214ish). Any more and he doesn't think they would be utilized fully. He thinks it's enough to have one in the Infants, one in the Juniors and one other.

He does feel that a secretary would help him a lot - give him much more time to work with the micros, the teachers and the children. Only this morning, he was doing some work with some children and was interrupted by parents wanting to know all about the school - wanting to send children there.

CODE: Bf74

Really the Head would like to do more research with micros. But

he sees little chance of that.

1.45 - 2.45: 2 J1 girls come into the office and use Edword, for the first time. They typed in their poem, handling it very well - not in the least bit bothered:

#### BLACK CATS

Black Cats are Lucky.  
L is for Lucky  
And  
Cats.....  
Kittens grow into cats.

C.....  
And Black Cats  
T....  
Said to be lucky.

(Didn't get all the poem down, but note that vertically it spells "black cats")

CODE: Bf75

They typed it in (quite slowly), printed it out, improved the layout and appearance and printed it out again - one copy for their book and another to take home.

The Head wants to do more work with the word processor but he finds typing skills, or rather a lack of them, inhibiting. So he is concentrating on the younger children so that in a few years they will be able to benefit from real word processing - drafting, editing and so on.

He complained about the time problem again. There is just not enough. He wants to explore so many computer avenues but is frustrated by the lack of time.

#### General Comments:

About the Centre schools: the Head would like to see all the 12 Centre schools linked up so that county wide projects could take place - e.g. data gathering.  
I think Ben Mercy is a valuable example of

CODE: Bf76

micro use in primary schools. Most children (and teachers?) seem happy and familiar with using the micro. And the Head has an open mind about its uses. He sees great value in Quest and database work, word processing, Logo (from development of language point of view especially) and even some drill-and-practice programs (though he was somewhat disappointed to come

across two top infants, boys I think, running through the time-telling program, but they were working at it well, with concentration and on their own). But not everything works out, or rather, involves more than initially anticipated, e.g. the Quest work, which still remains incomplete.

CODE: Bf77

DATE: Thursday 11th September 1986.

Phoned Ben Mercy Head to arrange a visit. Amazing - so interested and enthusiastic - such a contrast with Headland Head. He said things were busy and hectic - lots of second language teachers were in - and will be for two terms - teaching the children Welsh. So they're upsetting the routine somewhat. Not a lot was going on with the micro just yet - the Welsh language teachers had taken over the project work afternoons. They were doing a project in Welsh, but it was rather limited because the children's ability at Welsh is low. However, he sounded quite excited because all these teachers were going on an "Edword" course soon, so he hoped micros would "get in through the back door", by word processing Welsh language work. He asked if I'd heard that a Gwynedd BLUG (British Logo Users Group) was being set up - he'd got a letter about it - first meeting at Mysincl

CODE: Bf78

on October 7th, in the evening. He's going along to that. And then on Thurs, Fri and Sat (25-27th Sept) the Heads of the computer Centre schools were meeting. I asked him about visiting and "interviewing" him about micros in primary schools. He suggested I waited until after the meetings so that we could talk about them too.

He had found out that the Centre schools were going to be linked by telephone (modems) to computers through Prestel or similar.

CODE: Bf79

He was pleased - he'd got double phone sockets fitted into his and the Deputy's rooms.

CODE: Bi1-Bi22: Interview transcript (reproduced on ppl06-120): 15th October 1986.

CODE: Bf80

DATE: Friday 22nd May 1987.

Phoned Ben Mercy school to see how things were going: result interesting: Nationally, projects are going on in each LEA, looking at problems and use of new technology. In Gwynedd, they are looking at "problems associated with learning continuation across the primary/secondary divide".

One secondary and its feeders will be studied. Ben Mercy is one of 9 feeders for the secondary school in question. The Head is a local co-ordinator: on a part-time secondment basis, 2 days per week, for two years. He started in April 1987. This is organized through Wales MESU and there are national co-ordinators. All the local co-ordinators meet in Cardiff once a month.  
Other counties: Dyfedd: control technology.  
In Gwynedd, the secondary and its 9 feeders are working on a database of the local environment.

CODE: Bf81

Work will include looking at churches and chapels. This involves all teachers of top Junior pupils. It will follow a whole cohort of J4 pupils through to the end of their first year at secondary school.  
The database will be linked up to a mainframe. Modems will be installed in all schools involved, for communication purposes. CB radio will be used too and teletext pages will be developed. This all sounds very exciting. The Head invited me to visit.

Other news: New DTI money being used to offer printers to schools using "Edword" for only '46.

CODE: Bf82

DATE: 15th September 1987.

Telephone conversation with Ben Mercy Head.  
National - regional project.  
MESU Wales.  
Centre Cardiff.  
(If problems funding the project, Gwynedd will take care of it itself).

Gwynedd: The Head has 4 half-day secondments a week. He is looking at all the feeder primary schools to the local secondary school. They are using COMMITAL (like Prestel, but local - Llangefni mini-computer) to collect data (on top Juniors, and later, on land use - e.g. farming - i.e. the humanities). By Christmas, all these schools should have a modem.

The secondary school is then responsible for producing a bulletin using desk top publishing. They can also convert "Grass" files to Quest files. All schools should later be linked by CB radio.

Advantages:

- (1) Primary/secondary communication.
- (2) Expertise in the primary school.

The Head's current role, in co-ordinating these schools, is getting them started.

TRANSCRIPT [Bi1 - Bi22].

Interview with Headteacher: Ben Mercy School.  
15th October 1986.

CODE: Bi1

ADB: We are at the beginning of another school year, or towards the beginning of one anyway; a time for planning ahead and reflecting on the past. If we could first think about the past; can I ask you when did you first acquire a computer for the school?

HT: Initailly we got our first computer in 1982 when I started here, as part of the MEP scheme. Just one BBC - the standard kit really.

ADB. Yes, but that was with a cassette player?

HT: Yep.

ADB: And now you have progressed on to some more; how did they come about?

HT: Well, since it is confidential, umm, we had the one and then I was coming toward the end of my secondment in ..... - I approached the authority and said that it would be rather nice if we could use the experience gained during that year, by carrying on with some work in school. But in order to do that we'd need extra gear, and I tried to strike a deal whereby I said well if you give us some extra gear for us to do some development work, we'd be willing to use our school for in-service training at a later date, should we have any results from our work. And I was hoping to get an extra computer and a disk-drive and ur, I was called onto the office and he gave me two computers and three disk-drives, so it was quite.... and the Edword chips as well.

ADB: Yes, and the printer, that came.

HT: The printer was there as well, yes.

CODE: Bi2

ADB: So, now, what's the situation now?

HT: Well now, the situation is we've still got three computers, one printer, and we've got one dual disk-drive, and the others are singles. But we're also now part of.... they've developed that idea which started here - they've developed it as part of a network of Centres throughout Gwynedd, and there are twelve strategically placed Centres throughout the primary schools in Gwynedd.

ADB: Yes.

HT: And these Centres are each getting extra gear - umm - in our case we'll be getting an extra printer plus a concept keyboard which can then be loaned out to schools on a short term basis, for them to try before they think of buying one themselves.

ADB: Yes. Now you've raised this, could you tell me a bit more about the Centre schools? What's their role? What are the plans, the hopes?

HT: Well, it's still very much in its infancy - we've only had one group meeting so far - ur, the idea really is that because of the geographical size of Gwynedd, it's very very difficult indeed for a computer Centre to serve the whole area properly. And so what Gwynedd have decided, is that rather than send one man around the county in a little van, preaching the gospel, they will have Centres, as I say in various places which, are within reasonable reach of every school in the county, and the function of those centres will be basically as a clearing house for software, also as a hub, if you can imagine each one acting as a hub within a little catchment area of its own, it would be up to the individuals running those Centres, or

CODE: Bi3

responsible for those Centres, to decide, from local knowledge, on what is the best avenue to pursue within that little catchment area; for example, there might be an interest in word processing in one, in which case they'd probably develop along those lines, and so on. And we will be available for people to inspect software, to copy copyable software, and to give advice when we are in a position to do so.

ADB: So it will be up to those schools to come and approach you?

HT: It is up to them entirely, yes - up to a point - they will also expect some initiative from us - if for example, like umm this term we're trying to press the Edword word processing chip, now it would be up to the Centres to virtually sell the idea of Edword within their own catchment area. So there will be an initiative from the Centre there, as an example.

ADB: Alright...., thinking back again, when you first got the computer, what were the general reactions to it? Your own and other members of the staff? And expectations, and were they fulfilled?

HT: Well, umm.... this computer we had in the school, it wasn't my first experience of them. I first put a micro in the classroom, ooh, when would it be.... 19.. 1979...., 1978 even,



1978 when I put a little ZX80 together. And we had some very, very, very ooh primitive programs, about half-a-dozen very primitive programs - nothing of any real use, but at least you could see the possibilities, and then when I came here, the first thing I did was to get the one which was available under the Government scheme, and the reaction to it [phone rings - stop taping].... Yeah, when

CODE: Bi4

we first got this first computer there wasn't much in the way of software available, umm, we virtually survived on the Micro-Primer pack for the first couple of terms. At the time it was really adequate because most of the people on the staff had never used a computer, most of them were very suspicious of it in the nicest possible way, and the stuff in the microcomputer pack was easy enough to use and you didn't have to do great chunks of reading-up before hand, that it was fairly easy to get them interested, and in that case it served its purpose I think.

ADB: Hmm, did any people go on courses?

HT: No, no, no-one has been on any courses, there haven't been any courses. In fairness there haven't been any courses for anyone to go on in fact. Umm, there was an inception, no I tell a lie, one lad did go on the introductory course.

ADB: Yes yes.

HT: Umm, but apart from that there haven't been a number of courses for a variety of reasons, sort of, umm, you know, this restriction on courses because of the Industrial Action and so on.

ADB: So generally your expectations were fulfilled, initially?

HT: Umm, yes because really the main aim was, what I was aiming for initially was to get people to loose their fear of it, umm, not so much for any great educational advantage immediately - it was virtually - as long as I could get the staff to accept it in the class room - that was the first thing. I mean it wouldn't really matter how good the software was [knock at the door] at that point unless ur, [tape stop for door].... Umm, yeah, where were we? Yes it was really getting people to, to accept the thing and then once we got everyone happy with the computer then we started chipping the coft [whistles] - shipping software in (laughs) yeah.

CODE: Bi5

ADB: How did you organize this - did you at one time have a timetable?

HT: Yes, we did. We started off by everyone having a session on the timetable every week so that Mrs. X. knew that on Tuesday afternoon at 2 O'clock she would have the computer, regardless of whether she wanted it or not. This was really the big fault, I think. But when there was only one computer, and when it was a case of really getting everyone used to using it, it was the only way I suppose.

ADB: Umm, but since, you have changed your arrangement....

HT: Oh, indeed because, well, for two reasons; one, even before we had the extra computer we changed the arrangements, because, for example, we found that Standard One doing "Granny's Garden," for a term, shall we say, umm, would find that, if they only had the computer on Thursday afternoons at 2 O'clock, or 3 O'clock, just as they were getting into the spirit of the thing it was time to pack up, and give it to somebody else and it really defeated the object of the whole exercise, so we decided to put it on a priority basis - in other words, it was up to every teacher to make a case for use of that computer, then it was up to me to decide who got first go at it, and when, and how long, and I think, in our case, that worked far far better. Now, it's easier, we've got three and there isn't the same problem - so umm, but when there was only one it didn't really work at all on the timetable basis.

ADB: How is it arranged now?

HT: Well, we've got three;, we've got one which was basically in the Infants' department, and one in the Junior department and one which I keep in here for, partly for looking at new stuff, partly for administrative work which it is very useful for, and partly for bringing in small groups of children, or single children, for remedial work.

CODE: Bi6

ADB: Right... if we can think about software now, umm, how have you selected software in the past and what do you look for and avoid? What do you have in mind? Or, if you are seeing a new piece for the first time...

HT: Off the record, whatever I can get hold of (laughs). Ur, no really, we've tried to build up a library across the curriculum, we've tried to get good drill-and-practice programs; we've tried to build up a suite of Infants' programs; we've tried to build up a library of simulations and adventure games and things like logic and problem solving exercises. And really, quite honestly I haven't set out with any idea of going down any particular avenue; I've just tried to get hold of good software as broadly based as possible.

ADB: Hmm, if you did acquire a piece of software, would there be anything you wouldn't like about it, or anything you'd see in the program and think, "no, that's no good," or "not suitable"?

HT: Again, I would.... I think I would be assuming a lot to take that role all the time - I would far rather bring the piece of available software into school and what would suit me, might not suit Mrs.J3, or what might not suit me might go down a bomb with Mr.J4, sort of thing. So unless it's blatantly obvious that it's awful software, I tend to give it a try and see what people think of it.

ADB: Ur, can I ask you what you think about different types of software - on the one hand there's the drill-and-practice, the reinforcement type programs, then there's adventure games, simulations, Logo, word

CODE: Bi7

processing, data-manipulation....

HT: Can you come back next week? (laughs) Oh dear.... from what point of view, what do you mean, what do I think about it??? Presentation, or....

ADB: Thinking about, well, its usefulness within the primary school.

HT: I've been surprised, up to now, how useful some fairly un-useful-looking programs have been. Equally, I have been surprised how lousy some very attractive programs have been - so (pause) I don't think.... I honestly don't think.... in my case anyway, and it's a personal view, that lots wouldn't agree with, but there are no hard-and-fast rules in assessing software - that you can say avoid this or avoid that at all costs, because there are very few perfect programs, and even one or two very poor programs, we've found, I can't think of an example off the top of my head, but we've found that a program which is, to all intents and purposes, not a good program at all for the intention of what it was designed, and yet we can often find another use for it, which maybe even the fella who wrote it hadn't even thought of, and as such, you can't condemn it out of hand, so we keep a very open mind on software, and we'll always try it with children and then see what they get from it, and then decide, right where does this fit in with our scheme of things?

ADB: I know you've done some database work, what have your impressions of that been?

HT: Oh, I think it's got a lot of potential - I wish we'd got more time. The trouble we've found with using a database, if

you go beyond the very simple Fact-File type database - we've been using "Quest" here, and

CODE: Bi8

"Quest D" - the amount of time it takes to build up your data file, if you're doing.... if you're building up your own files of data, it's extremely time consuming.... umm.... that unless it's going to be an on-going project, for example, from year-to-year-to-year so that you can, over a period of years, build up quite a substantial amount of data - in a case like that I think you could probably justify the time spent in in-putting data into your files - on the other hand, very often, I think, you're going to defeat the object of the exercise, or one if the objects of the exercise of using a database in that it allows you to lift your level of investigation from purely recording facts and so on, to forming hypotheses; well if you're going to spend the time you previously spent deciphering data and are now spending on in-putting it - you still haven't got time for working out your hypotheses. So I think there's a lot to be said, where possible, and it will probably get better as time goes on, in using ready made databases....

ADB: Yes, have you used....

HT: We haven't done - no apart from "Dats" which came with the "Quest" pack that's ur, a little file of information about census in a village down South of England, in the last century. I notice that there's recently quite a few more suites like that coming on to the market, you know, batches of data, which I think will be very good. (Pause)

[Short break - thinking about next question - I put it to TM,. then he begins:-]

HT: Hmm.... how do you assess the usefulness of a computer in a school?

CODE: Bi9

In our case if a computer has been in a particular class, I would expect to see from that class an improvement in the standard and the general content of their work - I mean it depends - it really doesn't matter what the computer is being used for - even from say, drill-and-practice right through to using say, a simulation exercise, unless that computer's contributed something positive to the way that class has reacted, then it hasn't been worth switching on and using the electricity.... umm....

ADB: And is that umm.... just a feeling you get or....

HT: Initially it's a feeling - ur - you can tell - again, can

you go back to "Granny's Garden," with Standard One? It was a classic case of the computer being used in all the wrong ways in that umm.... I gave the teacher the program, she had six weeks left of the term, umm, she didn't do any preparatory work at all, she just waded straight in with it, and according to all the rules, that should have been a great flop, and ur.... But because she's the sort of teacher she is, going into that class a week after the computer had gone in with "Granny's Garden," it was quite obvious that the computer was contributing a vast amount to what was going on there, because you were in "Granny's Garden" - right? - ur, when ever you went in it was obvious you were in amongst the witches and the magic raven and all the rest of it, and that, there was no doubt at all that that computer contributed a lot. In some other places it may not be quite so obvious, particularly in the infants department, where, umm.... a lot of the programs - most of the programs we've got have been reinforcement stuff, and it's really only when you look at the work, of the improvement

CODE: Bi10

in the work that's put down in more formal areas, umm.... for example, number work is a classic case, it's only when you see the improvement in getting concepts over, and then reinforcing concepts, that you see that certain children who have been struggling for six months suddenly do very well indeed.

Music is another example - umm, children who have been learning to play the recorder - or more correctly, children who have been sitting-in on recorder lessons for two years and still looking out of the window, and particularly boys who think it is a bit sissy when you're eight-years-old to learn to play music, find them having tried "Note Invaders," which is a very simple drill-and-practice program (they don't get any easier) and yet those boys, because there's an element of gamesmanship, suddenly find that, without realizing it, that they'd learnt to read music. So yes, that's one way - obviously, you can see the results straight away umm, and I would think, looking back on it, on what's happened here, up to now, most of the advantages of using a computer have been fairly obvious ones, really, one hasn't had the time, quite honestly, umm to look into it in detail as to the more subtle advantages.

ADB: Hmm.... So you would say that the computer does enrich curriculum?

HT: Very definitely - I would say it goes further than enriching it, I would say umm, it pushes the curriculum out, umm, if we could go on to that - get back to "Adventure Island" - we have to get on "Adventure Island" sooner or later; a classic example of pushing out the horizons of your curriculum, where we

CODE: B11

had been doing geography-type work, social studies, environmental studies and so on - in the normal - the normal old-fashioned way if you like - now, once we'd started on the "Adventure Island" project with one class, within three or four weeks, the children in that class who were involved with the "Adventure Island" simulation were developing skills, of necessity, because of what they were doing - they were developing skills which we wouldn't even have touched upon in the normal school day... in.... in the primary school. And ur, we found that as we got into that project we were going further and further and further out and looking at things which (a) we didn't have time to do normally and (b) we wouldn't even have thought of and (c) even if we had thought of them, we wouldn't have thought the children capable of handling. So it definitely lifts the whole level of your learning - there's no doubt about it - given the right project or the right program, and the right teacher, in that combination.

ADB: Yeah.... so it's not just purely a case of the computer making the curriculum more effective or, making things more efficient?

HT: I think only teachers can do that basically, but without a good computer, or something similar - without the aid of something like a computer, very often it isn't possible, no....  
[pause: tape stopped]

CODE: B112

ADB: So what plans.... what are your immediate plans for computer use here?

HT: Immediately, we'd like to look into the use of a computer for word processing, partly because it's one of the areas we haven't done so far, and partly because the local authority seems very keen that we do have a look at it, umm, that's one aspect; we've come across one use for the word processor this week actually, which again wouldn't have been immediately obvious perhaps; up to now, we've been using it for children experimenting with lay-out of their own work, but now I've got one little girl in the third year who's a very severe learning problem as far as language is concerned - she has a reading age of about 5.8 or something - and we're using the computer now to get her - she thoroughly enjoys typing out little stories - really a few sentences - which she will write out on the keyboard as they came into her head, and then I will sit next to her and we'll look at what's on the screen, and we'll go through it and then she'll correct which ever mistakes she can see, when going through it - you know, in the logical manner. And then when she's done that - we print these out as they come - we print out her first one, we print out the second one - and then I'll go

through it again with her and correct maybe the other major mistakes, so that she has a final draft - then we have the three underneath each other - and what I'm hoping to do, over a period of weeks is, if we can keep this up - say three of four pieces of work a week - the child or the educational psychologist, can then look at all this work and he can probably see trains of thought or plot some kind of, you know, learning difficulties which are obvious from this we can then, you know,

CODE: Bi13

use it as a diagnostic thing. It's something we hadn't thought of - we just stumbled on it really.

ADB: And you've actually got the hard copy, then.

HT: We've got the hard copy yep, yep.... That's one thing, umm other plans I would dearly love to do a lot more on data-processing generally. Again, it will depend on what becomes available. Umm, we're trying to build up various files of stuff here, but I think we will have to rely on commercially available stuff eventually. Umm, also we've got into simulations - the teachers like doing simulation exercises - and I think that's half the battle - if they enjoy it then they're going to put more enthusiasm into it.

ADB: Why do you think that is? It does seem to be a general thing - that teachers do enjoy?

HT: Well, who doesn't enjoy a bit of make-believe I suppose it's what it amounts to really. (muffled) No, it's an excuse really to get really involved in the work - and this is what inevitably happens - you get so involved in what's going on in the simulation, which ever one it is, that it takes..., I'm convinced, from a teacher's point of view, it takes..., although there's an awful lot more hard work involved, teachers work far harder in preparation and in going about from group to group, in doing simulation exercise that they normally would, even the most organized teachers I've seen, but they tend to forget they're doing it, so therefore I would assume then that the stress factor is a lot less.

ADB: Yes, so perhaps it's not viewed strickly as work?

CODE: Bi14

HT: No. It's an experience, and obviously if that's the way they feel about it, they're bound to do a better job. I think there's a great future for it. An interesting thing about simulation exercises - it's strange how it's turned out that two things have come out: a) that you needn't have a very fancy looking program with glorious graphics, to be a success, and b)

it doesn't need to be a program which needs to be used an awful lot. In other words, you can be doing a simulation, or work based on simulation virtually for the whole week and yet the computer might only be involved for half an hour, so you're getting maximum use out of minimum availability in a way.

ADB: Yes, yes - so that the computer is perhaps a spark.

HT: Umm, it's just a starting point, just a kick off point yeah.

ADB: Have you thought about using Logo at all?

HT: We've thought about Logo - I've thought about Logo quite a lot. Umm, I'd be very, very.... it's all a case of pint pots and quarts and what have you. I'd love, I would dearly love, especially in this school where we've got the second language problem - or challenge - the authority call problem - we call it .... the business of trying to teach children a second language - be it English or Welsh - and I'm sure that if one had the time to sit down and really work out the material, I'm sure we could get a lot out of Logo - otherwise until such time is available, I doubt very much if we're going to be able to do much with Logo, except on the very very simple first level basis - turtle graphics basis really.

ADB: Umm. What about, so immediate plans.... as in....

CODE: B115

HT: Well, immediate plans are yet again to expand our library of software, that's always a top priority. We are on the look out, all the time, for good software, umm.

ADB: And get into word processing?

HT: Get into word processing, we'd also like to get - I'd like to get particularly the Infants' department used to using the concept keyboard - for obvious reasons there, umm I would also dearly like to be able to find the way of getting a modem into school - again talking about data-handling, I'd very much like - for two reasons I'd like to get a modem into school, firstly because I think it's got great potential in other areas, even simulations, if we.... I can imagine a class doing a simulation exercise wanting to refer to databases, and one of my criticisms up to now, of using a simulation is that I've found from bitter experience that unless you've got extremely good resources, back-up resources, in terms of library facilities, a lot of the work you can very often do in some simulations is going to be, well you're not going to fulfil it's potential. We've found doing "Adventure Island," because of the standard of the local library, children were going there after school to follow up things, but the stuff wasn't there, now if we had access, down



the line via modem, to a wider database, I can well imagine we would have had far far more out of that and I would think that, although it's sounds rather esoteric at this stage, but a modem would be very valuable thing for most schools. So I'd love to get my hands on one of those.

CODE: B116

ADB: Is there any likelihood with being a Centre school or anything like that?

HT: Well, this is what we're working on; also, the main.... the county have modems apparently in store, which they're rather unwilling to let out because they're worried about the responsibility of paying for the on-line use, in other words the initial '100 - '150 is neither here nor there, it's who pays for the use of the thing when it's on-line. And I can imagine at times of enthusiasm getting the better of oneself, and you could end up running terrific bills up on this. But there we are - people say this about the photocopier - we've got a photocopier here which we originally took out on a '26 a year rental and the county said you'd be able to get 400 copies a month out of that so it won't cost you much - we found eventually that that photocopier wasn't up to the job - we're now producing in excess of 4,500 copies a month from a machine costing I think it's '365 a year rental and we still justify it, so I think you've got to, you've got to, you know you've got to venture at times and say, alright, it's a bit of a risk but inevitably we've found, up to now, that once we've taken the plunge it's been justified.

CODE: B117

ADB: Umm, umm,... So can I ask you, ideally, if the money and resources were no object, how would you like to see computer use in your school, do you think, develop?

HT: I wouldn't, I don't think I'd want, I don't think I'd want any more computers as such - possibly one more, so that then I could have one, being purely selfish, nothing to do with the curriculum, then I could release one entirely for admin work and so on, that would be very nice. Umm, I would like to have three which could go round the school - instead of two and a bit at the moment, but beyond that I don't think I would need any more of those - what I would like to find in schools is a lot more peripherals - I'd love to have a turtle, I'd love to have a concept keyboard, a modem, as I've already said and, oh, the list is endless - it's like Christmas, you know, for a child, there's so many things you could want - that you would use, that you could find very very good uses for them - it's a question of how far the money goes - but again we come back all the time what we really need is plenty of good software as a top priority everytime.

ADB: What about time?

HT: What time? Well, yeah - ideally what I would love to do is have some poor young woman in here sitting answering the telephone and doing all this log work: I'd like to be able to spend more time with children with computers. At the moment it just isn't possible umm, on average I manage perhaps three, four sessions a week with children - which is no where near enough umm, I also have the odd twenty minute session, half an hour session with the remedial children, but there is so much one could do given the time, that if you weren't tied up with the sort of humdrum

CODE: B118

routine of everyday running a school, the mind boggles....

ADB: And realistically what problems has your school faced?

HT: Initially, obviously the reluctance - funnily enough, not from older staff, but from the younger staff - that I find very strange - the people that use the computer least of all in this school are the two youngest members of staff.

ADB: Any explanation?

HT: One because he thinks.... one of them thinks computers are a useless toy anyway - I mean he's rather extrinsic in his ways anyway. And the other one because she, until now, well, she teaches a Welsh class and there's another problem, up to now, until recent months, there hasn't been a great volume of Welsh software, and she for her own reasons felt that she didn't want to take an English language computer into a Welsh learning environment for obvious reasons. And they're the two who have been most reluctant to use it.

ADB: Yes, and you haven't, did you have any other problems then?

HT: Well initially because.... the ... initial problem was that I had older members of staff who wanted to use the computer - the infants teachers wanted to, but there really wasn't an awful lot of stuff to show them, and secondly, because of the Industrial Action, it wasn't possible to get them after school to teach them how to use it - you know, to have a little induction course, but then we had an in-service training day - no we didn't, we had a, I think it was a kitchen strike or something, so all the children were sent home so we had an impromptu computer course, and once they saw what was available, well ever since then, they've been using it

CODE: Bi19

all the time.

ADB: Yes, so you can perhaps imagine another school where they haven't.... where there isn't somebody with the knowledge or....

HT: Oh well.... that wouldn't apply.... technically, or theoretically that shouldn't apply because in any school which has a computer under the government scheme there should be at least two teachers or certainly one teacher who've been on an introductory scheme and they're looking for the cascade effect whereby that one goes back and preaches the gospel. The problem at the moment is that there are still I believe something like sixty or seventy schools in Gwynedd who have got computers where again, because of the Action, the teachers haven't been on introductory courses. [Pause]

ADB: Umm, umm.... Well, do you have any other comments to add? Anything else to do with micros in primary schools? How do you see it's future - nationally? Will it take off or will it.... what?

HT: Take off? People laugh at me - I've got - who was it? Was it Jimmy Carter - I have a dream - No it wasn't Jimmy Carter it was what's his name Martin Luther King.

ADB: Yes, that's right, of course!

HT: The other one, the other side of the fence. (laughs) I'd like to see a situation whereby schools could get in touch with each other - down line using their computers so... we could interchange data, so we could build up databases on a county basis or what ever. I'd like to see computers taken far further into the curriculum - they might sound like umm, fantasy

CODE: Bi20

uses in some ways, I'm thinking of the mundane tasks - I'd like to see for example my computer looking after my telephone and things like that - I don't see why it shouldn't. Umm, I would then be available to teach, which was what I was trained for anyway - not for reception work. Umm, I'd like to see children able to grow up along side computers growing up - if you know what I mean - umm, as we get things like voice synthesizers - I'd dearly love to expand - we've got a little electronic keyboard here - I'd dearly love to have the money to couple that to the computer and have a real go at it because we've got the expertise in school, musically - I think we could do some fantastic work. Again it's a question of money - or... or... in a part of the curriculum which most people - not including the deputy, most people would assume to be periferal really.... umm.... you know

music isn't really all that important - that's what most people say, I happen to disagree - but things like that - things which at the moment would be put down as exotics if you like, which I think in the world the children are growing up in, I think they ought to be given the opportunity to grow up with first hand experience again of technology, on as broad a basis as time and resources will allow - I don't see any wrong what so ever in that - I don't think its.... I don't think one should have to justify educationally immediately every single step in school - they shouldn't I don't - it may be a way out.... but I don't think that you should have to sit down very carefully before providing every experience and making sure that this is fitting into a grand design or anything - I'm all for kids having experiences on a broad as front as possible.

CODE: Bi21

ADB: Having a go and then seeing....

HT: Yeah, why not? I see no wrong at all in that - providing there's time for it.

ADB: What's your reaction to people, to others who say "micros in school - no, no use at all....

HT: I disagree

ADB: ... If I had the money, I'd rather spend it on something else.... than buy a computer".

HT: When I first... remember I said we started off by putting a ZX80 and I asked for '50 from the Education Committee for a grant toward developing the use of computers - this is what 1978 or what ever it was, and the chairman at the time turned round and said well you'd be far better off teaching them poetry than messing around with these new fangled toys. He's since changed his tune, and I think what does anybody, I mean anyone who gets used to the idea of being thought of as slightly odd, it doesn't worry you what other people think anyway - I mean if you think you're right, you're gonna do it anyway - No I don't particularly worry.

ADB: You don't try to change their minds?

HT: Sometimes, there are some people it's quite obvious you're never gonna change their minds and you don't waste time on people like that - you always give them the benefit of your opinion, you always tell them what you think, I couldn't let a chance go by and not say that, but it's amazing the number of people who have changed their tune, over the last three or four years - some quite real stick in the muds have really changed their minds about... not just computers, but technology in

CODE: Bi22

general; You've only got to look at the attitude of this authority in general... we've actually caught up virtually now.... and....

ADB: Umm, 'cause it wasn't very long ago when there was nothing.

HT: Oh, they didn't want to know - we were crying corners about it, it's true - so there's hope. (Pause).

ADB: Umm... anything else - any other comments?

HT: I hope you get your PhD after this. (laughs).

ADB: Well, thank you very much.

(400 counts total).

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**BEN MERCY**  
**YSGOL** [REDACTED]

Cyfeiriad/Address: [REDACTED], Ynys Môn/Anglesey, LL74 8SG

Rhif ffôn/Telephone no.: [REDACTED]

Prifathro/Headmaster: [REDACTED] BA, CBiol., MIBiol.

Cadeirydd y Llywodraethwyr/  
Chairman of Governors: [REDACTED], PhD.

Ysgol gynradd sirol yw'r ysgol, swd yn derbyn disgyblion  
ilawn-amser yn ystod y flwyddyn maent yn cyrraedd pump oed.  
Mae'r ysgol a agorwyd yn 1969, yn cymryd ei enw o'r Parchedig  
Goronwy Owen, offeiriad ym mhwyf Llantair Mathafarn Eithaf, a ddaeth  
yn enwog fel bardd clasurol yn ystod y deunawfed ganrif

The school is a county primary school, accepting full-time pupils  
during the year in which they attain their fifth birthday. It was  
opened in 1969 and is named after the [REDACTED] [REDACTED] [REDACTED], one  
time curate in the parish of [REDACTED] [REDACTED] [REDACTED], who achieved  
fame as a classical poet and scholar during the eighteenth century.

\* \* \* \*

Er bod y manylion yn y ddogfen hon yn gywir pan gyhoeddwyd hwy, ni  
ellir rhagdybio na fydd unrhyw newid a all effeithio ar y  
trefniadau perthnasol cyn dechrau neu yn ystod y flwyddyn ysgol neu  
mewn blwyddoedd i ddod.

Although the particulars in this document are correct at the time  
of publication, it should not be assumed that there will be no  
change affecting the relevant arrangements before the start of or  
during the school year or in relation to subsequent school years

STAFF YR YSGOL - SCHOOL STAFF

Prifathro/Headmaster: Mr ~~W. B. Jones~~, BA, CBiol, MIBiol.  
Dirprwy Brifathro: Mr J. ~~Smith~~, FLCM, HonTCL, LLCM.  
  
Yr Adran Iau/Junior Dept.: Mr W.B. ~~Jones~~ (Cysylltwr Mathemateg/  
Mathematics Co-ordinator,  
Mrs A.E. ~~Jones~~ (Cysylltwr Iaith/  
Language Co-ordinator)  
Mr H. ~~Jones~~  
Miss M. ~~Jones~~  
Miss M.G. ~~Jones~~ BA.

Adran y Babanod/Infants Dept:

Mrs E. ~~Jones~~  
Mrs B. ~~Jones~~  
Mrs M.L. ~~Jones~~  
  
Mrs E. ~~Jones~~, SRN, SCM. (Gweinyddes  
Feithrin/Nursery Assistant)

LLYWODRAETHWYR YR YSGOL - SCHOOL GOVERNORS

Cadeirydd/Chairman: Cyng/Cllr. J.E. ~~Jones~~, MSc, PhD.  
Is-gadeirydd/Vice-Chairman: Parch/Rev. C.S. ~~Jones~~, BD.  
  
Cynrychiolwyr y Rhieni/  
Parent Representatives: Mrs A. ~~Jones~~ (Ysgrifenyddes/Secretary)  
Mr R. ~~Jones~~, BDS  
  
Cynrychiolydd Staff/  
Staff Representative: Mr J. ~~Jones~~, FLCM, HonTCL, LLCM.  
  
Cynrychiolydd yr Awdurdod  
Addysg/LEA Representative: Dr O.C. ~~Jones~~, MB, ChB.  
  
Cynrychiolwyr y Cyngor  
Cymuned/Community Council  
Representatives: Mr Iorwerth ~~Jones~~  
Mr William ~~Jones~~

\* \* \* \*



## SCHOOL ORGANISATION

The school is divided into Infants and Junior departments. Until this year it was possible for pupils to join either a Welsh first-language class or an English first-language class. Because of a reduction in the staffing level at the school this is no longer practicable. As from this year, children who have a Welsh-speaking parent will have to join a class where Welsh is the main language of instruction. It must be emphasised that every consideration will be given to such children and that there is no danger whatsoever of any child being at an educational disadvantage as a result of being placed in such a class. Indeed, this is the norm in most schools in Gwynedd, and it is the stated aim of this Education Authority's language policy to endeavour to make every child bilingual before leaving primary school.

### Our Admission Policy

The school admits first-time pupils once a year only, during September, and in accordance with the LEA policy. This means that children are admitted full-time from the September following their fourth birthday.

Early during the summer term, parents of new pupils are invited to the school to meet the headmaster and staff and to provide details of their children. Towards the end of the summer term, the parents are invited to bring their children to school when they can spend some time in the reception class so that they can become familiar with their new surroundings and their class teacher. We feel that this helps them to look forward to the start of their school career rather than approach it with absolute uncertainty.

### The School Day

The school day begins with a morning service. On Monday and Wednesday mornings the Junior department hold their service in the hall. On Tuesday and Thursday mornings the Infants department have their service there, and on Friday mornings the entire school come together for a service.

The daily sessions are as follows:

Morning session:	Infants/Juniors	0900 - 1200
Afternoon session:	Infants	1300 - 1500
	Juniors	1300 - 1530

### Visiting the School

This is an "open" school, i.e., we welcome parents in at any time, but it must be understood that teachers have been instructed not to discuss children's work with parents unless an appointment to do so has been made, through the headmaster, to do so.

\* \* \* \* \*

The function of the school is to foster and encourage the development of each child as an individual and as a member of society.

As an individual one has to encourage his physical, mental and moral growth and to give him the opportunity to develop as fully as possible.

A child is also a member of society and he must be prepared for playing a full role in that society. To this end he will follow a school curriculum which:

Develops basic skills- speaking, reading, writing, listening and mathematical skills; provides an opportunity to study and interpret the environment; fosters a healthy and caring social attitude; provides varied experiences and the opportunity to give expression to them.

Apart from language, which is obviously related to everything which is carried out in school, there are aspects of mathematics and science, environmental studies (natural history, geography and history), the arts, religious education and physical education. In the Junior department, the "core curriculum" (language and mathematics) is taught formally to a large extent, as are music and scripture. The majority of formal teaching takes place during the morning session, whilst the afternoon session is largely given over to teaching through the medium of a co-ordinated project. The entire Junior department work on a project with a common theme, and these projects normally last for a term. This provides an opportunity to work across the curriculum, including some practical aspects of the "core curriculum". The intention of this approach is to develop skills, such as researching and problem solving, and it helps to place the pupils' formal work in the context of the real world of which they are part. We see the computer as an important and effective tool in this approach.

Our aim is to try to ensure that by the time a child reaches eleven years of age he is a fluent speaker of English and Welsh and able to read and write both those languages; that he is a child fully aware of the world about him; and that he has been provided with every opportunity possible to develop fully according to age ability and aptitude.

\* \* \* \* \*

## The Curriculum(continued)

### Mathematics

Mathematics work in the school is based on two schemes, namely Mousematics in the Infants department and Nuffield Maths in the Junior department. Welsh versions of both schemes are available and this enables us to teach the subject through the medium of Welsh where this is desirable. Although our syllabus and schemes of work are based on these two schemes, we recognise the value of using other commercially available material as a useful supplement to the work, and also in order to provide a varied approach. The emphasis is on the useful, practical application of mathematics and its enjoyment in natural situations.

### The School Language Policy

In accordance with the Gwynedd Education Authority's Language Policy both Welsh and English are given equal status in this school. Our established goal is to try to ensure that every pupil is thoroughly fluent in both languages by the end of his primary school career. In endeavouring to achieve this the following guidelines are kept in mind:

- a) Once the child has settled into school, attention is given to developing his oral skills in the second language, chiefly by taking advantage of the opportunities which arise daily in the classroom.
- b) At first we concentrate on developing the spoken language but as confidence increases in use of the second language, the child is encouraged to read and write the language also.
- c) In the Junior department of the school increasing use will be made of the second language in all its forms, and we will ensure that every child encounters a variety of experiences in both languages, and applies them in both contexts.
- d) The language balance will vary somewhat in nature from term to term and from year to year, but the ideal will be that every child (except those with a serious learning difficulty) shall be able to speak both languages fluently, and read and write about every aspect of the school curriculum and about his experiences both inside and outside the school in both languages.

Every pupil in this school is expected to learn Welsh and English to the best of their ability. When non-Welsh-speaking newcomers join us, special arrangements are made for them and the LEA will assist the school with that work.

Welsh is used as the natural language of school life in its formal and informal aspects. We are at pains to ensure that children who do not yet have good command of the Welsh language fully understand the situations in which they find themselves and we give special attention to any child who has language difficulties.

## The Curriculum(continued)

### Science

Science is part of the school curriculum right from the reception year onwards. Having said that, it is important that parents do not imagine that their children are surrounded by scientific apparatus, apparatus, tubes and complicated experiments similar to those which we experienced during our schooldays. In this school we concentrate on developing the senses, and through work of a scientific nature, the skills of observation, enquiry, experimentation, recording and interpretation, and problem-solving. Sometimes a facet of natural history will be used to further this end; sometimes the stimulus will come from a situation which has arisen naturally out of a classroom discussion, a home situation or a current event. Most frequently, scientific work will be a component of study of a wider nature undertaken as part of a project within the class or department.

### Music

We believe strongly in a structured approach to this subject, rather than a series of lessons where the children simply indulge in "community singing" and where one or two children are taught to play the recorder if they show an inclination to do so.

We believe that most children have musical ability and that it is part of our duty to foster that ability. To that end, every child in the Junior department is taught to play the recorder to the best of his ability. In addition, we attempt to develop any talent which manifests itself by encouraging that child to learn to play another instrument.

### Religious Education

The school has no direct or formal religious affiliation, but local priests and ministers are welcome at the school. We co-operate closely with the local parish priests and the ministers of the various chapels in order that the school may play a full and proper role in the spiritual life of the community.

The religious education provided is based on the Agreed Syllabus, a copy of which may be examined at the school.

Suitable arrangements can be made for children whose parents object to them receiving religious instruction or attending religious services.

### Sex Education

Formal sex education is not given, though the subject is touched upon in the context of health education in the upper junior classes.

## The Curriculum(continued)

### Health Education

We believe strongly that this is an important subject which should be introduced to primary school children. There seems little point honing a child's intellect whilst neglecting to emphasise the importance of a healthy body as a vehicle for that intellect! To this end, health education is an important part of our curriculum from the day a child starts at the school. In the infants classes the emphasis is on learning personal hygiene- learning to wash properly and to clean one's teeth. In the Junior department, we will examine such topics as food, personal fitness and so on. The matter of the onset of puberty will be dealt with as and when questions arise during classroom discussions. We believe that this is the best way to deal with this at primary level. In this context, the School Nurse is asked to spend an afternoon with the older girls during their final term in school, to help them to understand and come to terms with the physical changes which some of them may already be experiencing.

### Project Work

In the Junior department, much work is done through the medium of a project. The entire Junior department work on a common topic which lasts for a term, with each class adopting an individual approach according to the age of the children and the particular interest or speciality of the class teacher. (Last year's topics were Travel, Food and Colours). This method of working develops the skills of researching, problem solving, organising work and so on. In addition, such subjects as history, geography and science are made more relative to everyday life and consequently become far more interesting. This approach also allows the children to use and develop those skills which have been acquired through more formal teaching methods. The nature of this work requires that the children frequently have to do some research outside school hours- by asking questions of family, friends and neighbours, visiting the library and so on. Because of this, the success or otherwise of the project work depends to some extent on the co-operation and support of parents.

### "The Hidden Curriculum"

Apart from the specialities of members of the teaching staff, this is probably what gives a school its individual and unique character. This is the part of the curriculum which cannot be placed conveniently under subject headings- the philosophy behind the lessons and the attitudes and motivation of the staff.

Here at Ysgol Goronwy Owen we try to do a number of things which are not part of the formal curriculum; things which, to our mind, are important in life. We believe that we are here to serve more than just academic ends. We believe that a child should wish and be able to identify with his school- not only through the school uniform, but also through the attitudes of the school to the world beyond the school gate. To this end we attempt to develop links with the community, particularly with the elderly and disabled, and from the point of view of conservation of our heritage. We also have links with a school in Denmark. We are painfully aware that a number of children do not have the security of a loving and complete family unit and that some of them have to face up to great insecurity through the breakdown of marriages and so on. Consequently, we feel it is important that we teach our children to think for themselves and at the same time provide them with a good family atmosphere- even if this is in school.

## The Curriculum(continued)

### The Hidden Curriculum(continued)

As already stated, it is the policy of this LEA to aim to make every child bilingual before leaving primary school. It would be impossible to achieve this merely by teaching the languages formally. We must also make the children aware of their "Welshness" (if they are Welsh), or, if they are not Welsh, we should make them aware of what Welsh society and culture have to offer them in terms of an enriching experience. After all, we are not attempting to teach Welsh and English merely as academic subjects, but mainly as a medium of communication and as a means of personal enrichment. To these ends, the school attempts to create an atmosphere which reflects pride in our community, our island of Anglesey, in Wales and in Great Britain.

### Homework

As a general rule, children in this school are not given homework on a regular basis until their final two years with us when it is given partly as a way of preparing them for the routine of secondary school. We hope that the children will show an interest in project work outside school hours, and if it is necessary for children to do homework of any kind or for any particular reason, we hope that we can rely on the support of parents in ensuring that it is done.

As already stated, project work will require some individual research from time to time. We recognise that the child is the responsibility of the parents outside school hours, and that it is in the light of this responsibility that parents will agree or disagree with the policy of homework.

From time to time a teacher may ask a child to do extra work in order to remedy a particular weakness, or to emphasise a particular point. Under such circumstances it is vital that the home co-operates with the school by encouraging the child to do the set work.

### Children with special needs

Occasionally, a child might experience difficulty with some aspect of school work. Such children will be given extra attention in order to attempt to bring their work up to the general standard expected. Obviously the nature and amount of extra attention that the teacher can give will depend upon the nature and size of that particular class. Parents will be informed of any investigative procedures and naturally, should specialist remedial action be thought necessary, this will be discussed fully between the headmaster, the LEA specialists and the parents.

We recognise that a very few children show exceptional ability and that such children also have special needs. Again, we will do all we can to encourage and extend such children.

\* \* \* \* \*

## HOME/SCHOOL RELATIONS

This school cannot succeed in its objectives without the support of parents. We would encourage you, therefore, to take an interest in your children's education and to support the school in its work and community relations.

Unfortunately, the education world is going through a difficult period. The demands on teachers are increasing all the time, there is need for change in curricula and methods, and morale within the profession is very low. Because of the very nature of school life, this is bound to reflect on the education we are able to give the children. It is to be hoped that the situation will have improved considerably by September 1986, but if it has not, I would emphasise to parents that they will always be kept fully informed of any developments which might effect the day to day running of the school.

Parents may discuss their children's work at any time by prior appointment with the headmaster. The staff have been instructed not to discuss the work of any child without a prior appointment having been made to do so.

### The Parent/Teacher Association

The school has a PTA which serves not only as a fund-raising body, but also as forum where new educational developments can be discussed. From time to time the PTA organises social events, with the intention of helping parents, especially those new to the community, to get to know each other. It is hoped that you will support the PTA in all its activities.

### The Governing Body

As well as the PTA, parents do have another channel of communication with the school (and the LEA), namely through their elected representatives on the school's Governing Body (see page 2).

### Discipline

Because of legal ambiguities and uncertainties with regard to the administration of corporal punishment, the school no longer asserts the right to use this method of punishment (however rarely the need may arise). Should any pupil persist in misbehaving, in spite of the school's efforts to discipline him, or in the event of any serious misbehaviour, the parents of the child will be informed. In such cases we expect the full co-operation of the parents.

\* \* \* \* \*

## SCHOOL UNIFORM

Following a referendum on the question several months ago, the school will be adopting a uniform as from September 1986. The school colours will be red and grey and the uniform is as follows:

**Girls** - Red pinafore dress with a white blouse and grey cardigan (if necessary); or a grey skirt, white or grey blouse and red jumper.

**Boys** - Mid grey trousers, white or grey shirt, red jumper.

Details of local suppliers, together with current prices are available from the school. Should parents wish their children to wear a tie with this uniform, the colours should be red and grey.

It should be emphasised that there is no question of this being a compulsory uniform - parents are free to adopt it if they wish. If children are not in school uniform, they will be expected to dress neatly and tidily. They should not wear jeans, ear-rings or make-up of any kind.

### Gym. clothing

All children are expected to dress appropriately for P.E. lessons in the hall. Boys should wear shorts, T-shirt, and pumps or trainers. Girls should wear similar clothing (though they may wear leotards if they wish).

CHILDREN SHOULD NOT WEAR THE SAME FOOTWEAR FOR P.E. AS THEY DO FOR OUTDOOR USE.

\* \* \* \* \*



LONGSIGHT SCHOOL: CASE RECORD.

From Fieldnotes.

CODE: Lf1

DATE: Monday 28th October 1985

Discussion with CT. Need to decide on 2 pairs of pupils for case study - one group 2 girls and one group 2 boys.

The children's work will be based on worksheets - "guided discovery" - a stage managed environment with room to explore: introduction, exploration, explanation and reflection. Children need to make sense of their learning applying process skills to their thinking.

CODE: Lf2

DATE: Tuesday 29th October 1985

10 - 11.30 am

Saw the Headteacher; he is very busy teaching Infants because their teacher is off for a week. It now looks like there will be two BBC microcomputers in J4 classroom (the ones who had worked with Logo last year). Two new ones have joined the class - girls. In the J3 classroom (second and third juniors) there will be one BBC and one Apple micro in a walk-in storeroom off the classroom. It is possible that a retired teacher will come in and help with Logo in that class.

CODE: Lf3

In fieldnotes, list of possible groupings and timetable arrangement for the groups.

CODE: Lf4

DATE: Friday 15th November 1985

Arrived at 9.30 and stayed for two hours.  
An organizing time. Spoke with J4 class teacher about groupings and timetabling. She told me I could come in any time I liked and that she would fit in with whatever I was doing.  
Arranged to come in on Monday to see all the groups briefly in order to find out what they remembered or have forgotten since last year, and work further on the groupings.

There are 3 new pupils to the class: I will put them in a group together (apparently, one looks very promising).

Talked to the Head he told me lots of people visit the school including teacher trainers but he is well used to me now.

Looked in on J3 - two computers in the cupboard. The class teacher is starting Logo with them. I don't intend to

CODE: Lf5

do much with them. I told J3 teacher which children I intended studying; he thought I was asking for trouble choosing Evelyn as she is a real chatterbox! I think it should work out though.

Looks like J4 teacher is going to be fine to work with. The Head said "She is not too confident with computers", but the children will be mostly working on their own. Mrs J4 is "a good sort" - she keeps order and has a traditional style of teaching but also uses the children's nicknames.

DATE: Monday 18th November 1985

9.30 - 3.30.

Went directly to J4 and switched on the machines. All were in assembly until about 9.35. Class teacher's very co-operative. She started the class on some maths work. I called up the first two groups: C and E (girls) and A and A (boys). Throughout the day the children were given the following task (revised session 10 CT Logo lesson plans): -

CODE: Lf6

WRITE A PROCEDURE TO DRAW A FLAG:-



<----- START AND FINISH HERE.

The groups that were successful at this and had the time, were asked to edit their procedure and put either a line or a cross on the flag.

Lisa and Everlyn:

Working together for the first time. I asked if this would be okay - Everlyn said "Yes". Lisa was a little hesitant then said "If my pencil nib doesn't break".

They start by direct-driving the turtle and writing down what they do. Lots of discussion. They check over the commands - Lisa reading out to Everlyn. They take turns to type in commands, they draw a flag in direct-drive. They then clear the screen and draw it again. They forget to write it as a procedure - i.e. give it a title and so on. They do this later and complete the task. I then ask them to edit their procedure

and put a line across the middle of the flag. They remember how to edit. They think about this carefully and look up their procedure and the drawing. Their first try is unsuccessful. With some help they see they have LT instead of RT 90. They edit again. Any changes they make, they keep a note of - i.e. they keep their revised procedure up to date. The second attempt is unsuccessful - another LT instead of RT. The bell rings for Break.

George and Norman:

They write commands in their book first, each working on his own. They then work in direct drive. A short quibble about the size of the FD. G. decides on FD 300 rejecting (correctly) N.'s FD 600. I tell them to write a procedure for the flag. G. remembers the title line and END. N. reads out the commands while G. types in. Success. I ask them to add a line to their flag. They keep their flag on the screen and direct-drive a line on it making a note of the commands. I remind them about editing (EDIT "..."). They had forgotten the word EDIT. G. and N. very quickly and successfully add a line. I ask them to put another line making it a cross. They look at the picture and directly start editing before direct-driving. This is successful.

The final group consisted of the 3 new pupils to the class. I basically followed CT's Logo lesson plans, Session 2 but didn't complete this. No detailed observation notes of their work.

CODE: Lf7

Reflections.

Another "good day" at Longsight. The children were generally enthusiastic about "having computers again". The class teacher was obviously aware of this as, on several occasions, she threatened some children with "no computers" if they didn't get on with their work or be quieter.

Most had forgotten the word EDIT. The aim of today was to find out what they had remembered or forgotten. The session revised editing. However, virtually all the children quickly recalled how to edit and handled the actual editing very well: it seems that just the word had been forgotten, not the process.

The new grouping seemed to be working out generally.

Also, working with the 3 new ones was interesting: I really wasn't aware of how much the others had learned. The new ones knew very little about turns and angles, things that the rest of the class took for granted.

CODE: Lf8

Timetabled Grouping:

	Morning	Afternoon
Mon	Lisa & Everlyn M & A (boys)	George & Norman J & D (boys)
Tues	D & M (boys) R & R (boys)	S & S (boy/girl) A & D (boy/girl)
Wed	S, M & H (2 boys + 1 girl)	
Thur	C & E (girls) A & A (boys)	S, A, L (2 girls + 1 boy) (new ones) L & A (boys)
Fri		

DATE: Tuesday 19th November 1985.

Chance meeting with George's mum: she said that he was pleased to have computers again and that yesterday's work was a "cinch". She seemed surprised at George's reaction (considering that she thought he didn't like computing!). I don't get that impression. This may partly be explained by the fact that in 2 years of having a ZX81 at home G. has only ever managed to get one game to work on it (because of the lack of memory).

CODE: Lf9

DATE: Monday 25th November 1985

All day at the school.

10.10 - 11.45 with morning Break in between: L and E.

1 - 2.10: "new" pupils

2.10 - 3.00: G. and N.

All working on Session 11. New pupils working on Session 2.

CODE: Lf10

Session 11 is concerned with de-bugging - two main activities: simple de-bugging of a flag procedure - all done with relative ease. The de-bugging of more complicated house procedure. This presented a number of problems, particularly with putting the triangular roof on the house. (Confusion because of different ways of de-bugging it and if the RT 120 is not changed to LT 120 all other commands need changing too).

Generally the groups found the exercise challenging, but E. expressed frustration and was ready to give up: L. showed much more perseverance. G. expressed interest in what the rest of the class was doing - i.e. making Christmas cards - but at least his feelings revealed that he didn't think the Logo work a "game". However when I told E. and L. that they would be able to help other groups working on the same task later in the week, E. said words to the effect "does this mean that we won't have to do class work". This was said with glee - she saw this as getting out of work, but I told her she would only have to help if the others got into difficulty.

What happened during the day:

I arrived shortly before 9.30 and went along to J4 - assembly was still in progress I looked over the work to be done. The first groups came at 10.10. From about 9.30 to that time Mrs.J4 talked about fractions and percentages and set the class work to do.

CODE: Lf11

I asked her if she minded if I taped the children working with Logo. She said she didn't. She kept the noise level down and the sound quality was adequate, although for some reason, for about the first 15 mins of the tape, only a loud buzzing noise is audible. I don't understand this as the rest is okay. The actual children (first L. & E.) didn't seem at all bothered by the tape. With G. and N., I switched it on without them noticing, and when they did realize they were not bothered by it either.

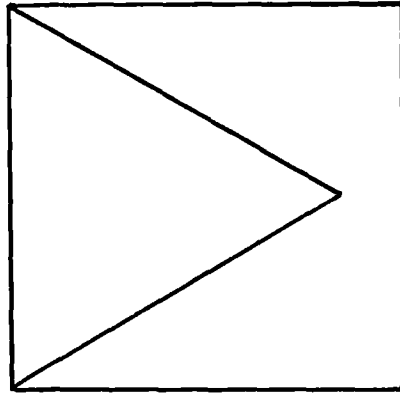
When the first group arrived I went over the work that needed to be done with them and they set off on their own.

The case study groups (L. & E. and G. & N.) do not know that I am studying them in particular - they show no interest in the notes I take since they are generally absorbed with the task in hand.

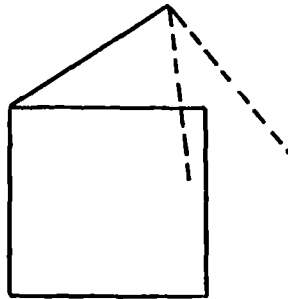
CODE: Lf12

Lisa and Everlyn:

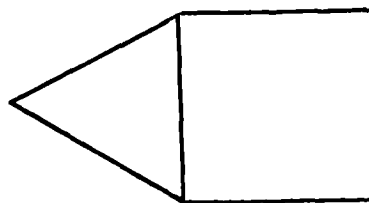
Generally they worked well together - fairly co-operatively - although on this occasion it turned out that E. did most of the typing whereas L. did most of the thinking and working out. Problems occurred when they ran into difficulties and E. made suggestions without having carefully followed what was going on. In fact she got quite frustrated when things didn't work out. Their main problem was de-bugging the house procedure which (amongst other bugs) puts the roof on the square like this:-



The girls first tactic was to resort to direct-drive. They ran into problems when they first tried to direct-drive the roof shape on the square. They could not get the angles right:-



They, at this point, abandoned the REPEAT 3 [FD 100 RT 120]. I helped them and they changed the RT 120 to LT 120 which gave them this:-



CODE: Lf13

Discussion followed about uprighting the house. L. had the right idea - she wanted to add RT 90 at the beginning of the procedure. E. had different ideas though, which didn't work, but with my encouragement, Lisa's idea was followed and it worked. In the end, they successfully managed to de-bug the house.

Details of how they de-bugged the house:- First they type in the given procedure for a house with bugs. They then try, upon E.'s suggestion, removing the PU. They next try out the commands in direct-drive. They run into some problems. I guide them to change RT 120 to LT 120. They direct-drive the house commands with this changed and this is successful, except the house is on its side. They edit the house again and put RT 90 at the beginning. This works.

Basically, throughout, L. did the thinking and E did the typing. E. quickly got frustrated. L. was much more patient.

-----  
NOTES ON TAPE.

TAPE No.1:Side A

Fieldnotes: Lf12-13

Counts: 000 - 179 inaudible

179 to the end: Lisa and Everlyn: work based on Session 11

(De-bugging).

Quality of sound: poor - hard to distinguish what the girls are saying (this improves as the class work gets quieter).

610-ish: L. and E. discussing commands (quite interesting). L. trying hard to put her suggestion of inserting RT 90 at the beginning of the procedure to upright the house, over to E.

TAPE No.1:Side B

Counts: 000 - 320 L. and E. continued.

See accompanying fieldnotes.  
-----

George and Norman.

They set to work very quickly and in no time at all de-bugged the first buggy flag procedure. With the buggy house procedure, they also encountered problems in getting the roof on the house and tried several times without much success. I encouraged them to draw the trail the turtle would leave and follow it through command by command in order to find out where the turtle needs to be to draw the roof on the house. Eventually they do find out (with some directive help from me) that the turtle needs to be in the top right-hand corner, facing left.

CODE: Lf14

G. and N. did a tremendous amount of editing on the buggy procedure before trying it out - i.e. they didn't make one or two corrections and then type HOUSE to see what was drawn. When the procedure was still buggy I explained to them that it would be a good idea to follow the procedure through command by command - in the process of doing this I accidentally lent on the BREAK key and as a result, the procedure was lost. However, they were not too bothered by this, perhaps because they hadn't managed to debug

it. Possibly they were glad of a new start. They typed the buggy procedure in again - in edit mode - and edited it as they went along.

G. remarks, with some envy, that the rest of the class are making Christmas cards. With the incentive to finish quickly they complete by 3.00 pm and make cards.

Before they leave, I asked them what advice they would give to other groups about how to tackle the de-bugging tasks: they say "get on and stick at it" (Counts about 260, TAPE No.2:Side A).

-----  
NOTES ON TAPE.

TAPE No.1:Side B

Fieldnotes: Lf14

Counts: about 300 to the end: G. and N. tackling de-bugging tasks.

Lots of background class noise - hard to hear what the boys say.

Continued on :-

TAPE No.2:Side A

Counts 000 - 227.

See accompanying fieldnotes.  
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Other points: Talked with the J2/3 teacher at Lunch time. He was glad of the teacher trainer because it gave him opportunity to work with groups who had recently started Logo. He also remarked that he thought it got boring going over the same stuff with different groups.

CODE: Lf15

Generally, I thought the children found the work challenging and worked well at it. It will be interesting to see how the other groups manage during the week. I said a few things at the end of the day to the class about where to find their books, the work and disks. I also told them to ask someone from today's groups who had already done the work, if they run into problems.

They generally seemed to be pleased at having computers again.

DATE: Wednesday 27th November 1985

Message from CT who had heard from the Head - two machines down, but they should be fixed by Friday.

CODE: Lf16

DATE: Monday 2nd December 1985.

At the school from 9.20 to 3.40.



Got to the classroom before the kids were out of assembly.  
Sorted out the day's work.

Problems during the week as only one computer had been in operation and as a result some groups had started work as early as 8.30. Still only one computer operational. For today, the BBC from J2/3 class was borrowed. The teacher trainer was away with a cold so the J2/3 teacher would have little chance to work with Logo in his class anyway. There was an initial problem with plugs - ended up borrowing the monitor as well.

I looked through the books and disks of the groups I hadn't worked with last week. Most had saved a de-bugged house. All had had a computer session. Apparently groups had encountered problems but had been assisted by G. and N. and others. E. and L. hadn't helped much as they hadn't been asked. E. reported that rather than "helping", G. had shown other groups his "answers".

This week the groups worked on Session 12.

CODE: Lf17

It is about drawing circles and arcs. A lot of work is involved and today groups only went up to Activity 6. Also I made some alterations to the work (it seemed unnecessarily wordy) in places.

Lisa and Everlyn: 10 - 11.45-ish.

First I asked them to read through the work. I join in and turns are taken reading out the work and answering questions as we go along. I get them to write down:-

REPEAT number of times [FD so many steps RT 360/number of times]

I have to explain that "/" means "divided by". I try to explain what the expression means but they don't really latch onto its meaning until later. The idea of "360/number of times" does become important and useful as the session progresses.

Activity 1 :- no problems.

Interestingly, without direct instruction, they write

REPEAT 6 [FD 10 RT 360/6] instead of RT 60. They do this for all three.

E. asks if she can draw a bigger circle. She does this and in effect they do the next piece (which is draw a shape that looks more like a circle):-

REPEAT 40 [FD 10 RT 360/40]

CODE: Lf18

I asked them how they would tell someone to walk a circle:  
interesting answers:-

- walk round a tree (Lisa)
- walk around and around
- draw a chalk path for them to follow
- walk a circle (Everlyn)

I ask what would they do if the person didn't know what a circle was. Then I explained, using their previous command for drawing a circle, that what the turtle does is go forward a bit (10) turns right a bit (RT 360/40) and does this lots of times (REPEAT 40). Then E. says that if they didn't know about circles they wouldn't know about degrees!

Activity 2:

I asked them to write commands to draw a bigger circle:-  
REPEAT 60 [FD 10 RT 360/60]

[The bell then rings for Break]. I ask them to draw three circles on the screen which have a different number of forward steps.

This they do:-

```
REPEAT 60 [FD 6 RT 360/60]
REPEAT 60 [FD 4 RT 360/60]
REPEAT 60 [FD 49 RT 360/60]
```

Activity 3:

They copy the table into their books and fill in the spaces. They can fill in the gaps but when I ask them how they got their answers, they cannot explain. I explain that the turning is worked out by dividing 360 by the number of repeats.

CODE: Lf19

They try out some of the procedures. Surprised expression by the last one: REPEAT 5 [FD 72 RT 72]. They expect to circle! Under different circumstances they would have spotted that this would draw a pentagon.

Activity 4:

I didn't think this activity was very clear or useful. With some help from me they work it out. E.'s work is very untidy and the columns were not equally spaced - muddled rows. I ask her to write it out neatly. I think she has become bored by now. L. carries on. She works out the largest and smallest circle. I ask her, using REPEAT 90 [FD ... RT 4] to change the FD to find out the largest circle that can be drawn that fits on the screen. It turns out to be FD 22. They finish at this point.

During the Lunch Break I do some work at the computer. Lots of kids are in the classroom because it is raining. G. and N. ask if they are on next and when I say yes, they seem pleased.

CODE: Lf20.

Interest increases in what I am drawing on the screen. I try the following procedure:-

```
TO F
REPEAT 45 [FD 10 RT 4]
RT 90
F
END
```

A group of boys (G. and N. included) gather around and watch as I edit the procedure, changing the turning. They are pleased with the results. I ask G. and N. what type of procedure it is - will it ever stop? They say no - it goes on and on because the title line is in it (i.e. F) but they don't come up with the word "recursion". They remember when I tell them.

George and Norman.

As before, the work is read through and they write down the formula:-

```
REPEAT number of times [FD so many steps RT 360/number of times]
```

Again, they do not grasp the full significance of this until later.

Activity 1:

I encourage them to leave the RT as a sum:-

```
REPEAT 6 [FD 10 RT 360/6]
```

For a shape that is more like a circle they write:-

```
REPEAT 50 [FD 10 RT 360/50]
```

CODE: Lf21

When I ask them to say what they would tell someone to get them to walk a circle they say:-

- walk a circle

- do REPEAT 50 [FD 10 RT 360/50]

I ask them to explain what this means in words. They find this difficult so I explain. N. then suggests that to walk half a circle it would be 360/25.

They try this out but report that it went over the circle twice. I tell them that next week we shall be doing work on parts of circles. I explain in words what REPEAT 50 [FD 10 RT 360/50] does and then they decide that if the number of repeats was 25 then half a circle would be drawn. They try this and are pleased with the results.

Activity 2:

I ask them to draw a bigger circle. They come up with:-

REPEAT 100 [FD 10 RT 360/100].

Activity 3:

They move onto this on their own accord and work through it. I ask how they work it out. They say that the third column is a repeat of the second. I say that this is true and explain the sum:  $360/\text{number of repeats}$ . They write the appropriate sums down by their table.

Activity 4:

They move onto this on their own. They work through it with some help. I think they understand, well, are certainly aware of

CODE: Lf22

the connection between 360, the number of repeats and the turning.

Instead of Activity 5, I ask them to change the size of the FD in REPEAT 90 [FD ... RT 4] in order to find out the size of the biggest circle they can draw that fits on the screen. I think they get much more enjoyment out of this than they did from the filling in of the table. They also, after finding the largest to be FD 22, experiment with FD 22.5.

A few minutes to spare before the afternoon Break - they experiment with half and three quarter circles. They try to use 270 with the three quarter circle - it makes sense, but they wonder what to divide 270 by. I tell them to look at REPEAT 90 [FD 22 RT 4] and explain what REPEAT 45 might do.

After Activity 4, N. looks ahead and seems pleased by Activity 6. I remind him that he hasn't done the work in between yet.

After Break: 2.40 - 3.30: The "new" pupils.

Further work on Session 2. One of the girls, S. latches on more quickly and easily than the other two.

CODE: Lf23

Comments and reflections:

Basically, there is no doubt that there is a lot more for the children (and me) to learn about Logo. They haven't done much work with circles before and seem to find it interesting - more precisely - they get pleasure from drawing circles on the screen but aren't so keen about the table filling out work. I don't blame them. But at least it reiterated the connection between  $360/\text{number of repeats}$  and the turning. I think they will find next week's work more rewarding.

I handle the second group better than the first. I ought to spend more time working through the sheets myself.

No use of their disks was made, nor did they ask to use them.

CODE: Lf24

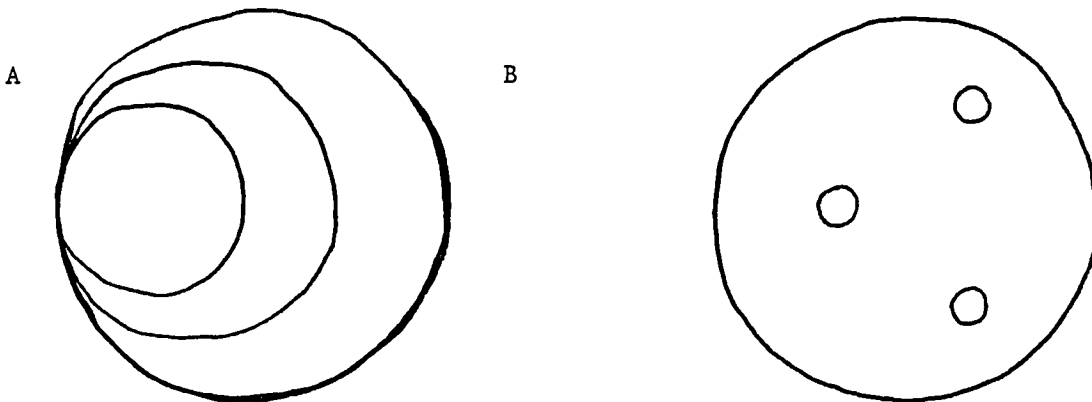
DATE: Monday 9th December 1985

9:30 start: Kids already in the class - no assembly because all are preparing for the school play next Tuesday. Christmas activities definitely taking over - shown in the children's lack of concentration. Mrs.J4 agreed. She said you certainly couldn't teach them anything new at this stage - they're too excited about Christmas.

Computer had been mended so started with two.

First Group: Lisa and Everlyn:

Session 12: Activity 6: Two drawings:-



(TAPE No.2:Side A)

Initial problems about remembering how to draw circles. Tables from last week utilized. On my direction, they write in their books the commands to draw A. I remind them to write it as a procedure:-

```
TO TUNNEL
REPEAT 5 [FD 3 RT 72]
REPEAT 40 [FD 3 RT 9]
REPEAT 120 [FD 3 RT 3]
END
```

CODE: Lf25

They then type it in.

Problems with REPEAT 5 [FD 3 RT 72].

It produces a tiny dot: actually a very small pentagon: I ask them what that line of the procedure draws: they think a circle - but I draw attention to the number of sides the shape has - i.e.

5 hence a pentagon. They eventually change that line in the TUNNEL procedure to REPEAT 15 [FD 3 RT 24].

It's okay: it draws three circles of different sizes. I ask if they can improve it - they say no. I say that's defeatist. I tell them to look at the procedure again, in edit mode. I ask how can the circles be made bigger? "Change the number of repeats" says L. I suggest they look at the FDs - because if you change the repeats the RT will have to change too as the number of repeats times the RT equals 360. It would be easier to change the number of steps - FD 3 is pretty small.

FD 3 is then changed to FD 20 on each line. This makes the big circle too big: goes off the screen. They edit again and change the last FD 20 to FD 15:-

```
TO TUNNEL
REPEAT 15 [FD 20 RT 24]
REPEAT 40 [FD 20 RT 9]
REPEAT 120 [FD 15 RT 3]
END
```

CODE: Lf26

"I like it" says E. "It's still an elephant's eye" says L. They save it. E: "It's a masterpiece"  
E: "We've decided no, we don't want to do the other one".

They don't want to draw the next design: they say it will be too difficult. But E's says words to the effect:-  
"you could write a procedure for the big circle, then one for the little circle and then put them together"  
(E. actually thinking about breaking the problem down into sub problems).  
L. starts typing the commands in without defining the procedure. But after the first line, L. remembers and the type:-

```
TO BCIRCL (originally BIGCIRCLE, but too many letter for the BBC)
REPEAT 120 [FD 15 RT 3]
END
```

Then they save BCIRCL. Then:-

```
TO SCIRCL
REPEAT 5 [FD 20 RT 72]
END
```

They use this pentagon procedure again only because it is the last line of the table, hence the smallest "circle". It is too small so they change the FD 20 to FD 40. But that clearly draws a pentagon. They eventually change it to REPEAT 10 [FD 20 RT 36] and that's fine.

CODE: Lf27

They work at the computer and write down what they type in:

BCIRCL	PU	LT 135
RT 90	RT 90	FD 200
PU	FD 300	PD
FD 75	LT 90	LT 45
LT 90	PD	SCIRCL
PD	SCIRCL	END
SCIRCL	PU	

They don't have time to type it in as a procedure as it is Break-time. They do type it in at about 1pm - first lesson of the afternoon. They type in the procedure and call it "?" (E. initially wanted to call it titface.) They try it out but BCIRCL and SCIRCL have not been loaded from disk. They load BCIRCL and try to load SCIRCL, but they had forgotten to save SCIRCL so they type that procedure in quickly - they had written it down in their books first. They save it. They type ?. It works and it is saved.

-----  
NOTES ON TAPE:

TAPE No.2:Side A.

Counts: 285 - END.

Fieldnotes: Lf24-27

Lisa and Everlyn: Session 12, Activity 6: Drawing circles:

Clear expression of their surprise at the procedure results - (365). E: "I don't get that".

I explain that their procedure draws a very small pentagon (REPEAT 5 [FD 3 RT 72]).

450: "Could you make this better?"

E: No. (Everlyn sounding very moody).

560-ish: E says "we're not doing that round one, it'll be too difficult"

580: E: We're going to do BIGCIRCLE, save BIGCIRCLE, LITTLECIRCLE, save LITTLECIRCLE... then put CIRCLE in the CIRCLE.

TAPE No.2:Side B: (E. & L. continued)

Counts: 000 - 230

This side starts with E. & L. typing in their procedure TO BCIRCL (Lf26).

E. is bossy at times, e.g. E. says "Let's do it my way", L. reluctantly says "O.K."

Stopped taping L. & E. because it was Break-time.  
-----

TRANSCRIPT.

TAPE No.2: SIDE A:

Counts: 285-end.

Fieldnotes: Lf24 to 27.

Everlyn: Repeat 3. Return. 360.

Lisa: Repeat 40.

E: Repeat

L: Forward... so... I've got my hair stuck.

E: Forward. What's the number of forward?

L: 3.

E: Forward 3. RT 9. Repeat 40 [FD 3 RT 9].

L: And then a Repeat.

E: 360

L: You don't have to do that.

E: Don't you?

L: No.

E: You could have told me!

L: What did you want to do that for?

E: What?

L: Did you draw the marker?

E: Yes. Right then.

L: 120

E: Repeat 120.

L: 120

E: 1 2 0.

L: FD

E: FD 3 RT ummm...

L: 3



E: That's the biggest circle Lisa! (angry). Which one's the biggest, that one or that one? (to me).

L: That one with 3.

ADB: That one with 3 in it, I think, wasn't it? These at the top are bigger than the ones at the bottom (of the table).

E: But why has that one got 3 in it?

ADB: All have, because  $120 \times 3$  is 360, isn't it? That's how you worked that out.

E: FD 3 RT

L: I know.... now we've got to do it, the procedure.

E: Wait for me Lisa. RT 3

L: I will.

E: Finished.

L: Right then, you've got the procedure. END. Yes, END at the bottom. Right, we'll do a line each. Are you O.K.?

E: No (laughing). TUNNEL. Can't you go a bit faster? Right, my turn. It's got... Lisa

L: Yes, I know. Repeat

E: Can't you go a bit faster?

L: This is the first one.... 5

E: FD 3 RT 3

L: RT 3?

E: Yeah!

L: 72

E: It says RT 3 FD 3 RT

L: 72

E: Where?

L: There. Right, your turn next. Look at theirs compared to ours!

E: Looks as though it's been white - brown-washed.

L: Right, you go on, come on, Repeat

E: Repeat... Repeat what?

L: 40

E: FD yeah?

L: FD 3 RT 9 brackets Repeat 120.

E: FD 3 RT 3

L: END

E: END.

L: Oh, I want to see this.

E: E L (TUNNEL).

L: I've got to see this.

E: A bit small don't you think?

L: No, it's not.

E: Eh?? We did three Lisa! [Pause]

ADB: Do you want to watch it again?

E: Oh, it's...

ADB: What do you think?

E: There's a tiny dot there. I don't get that!

ADB: You have a look at your procedure - edit it again (to show the procedure on the screen)

E: EDIT space (....)

L: TUNNEL (....)

E: Oh I don't get that! We've done three and it doesn't work!

ADB: Do you know what your problem is? Did you watch...

E: I'm doing it all again!!

ADB: What are you going to change?

E: I don't know.

ADB: What's your problem? First of all have a look at that line.  
What shape does that draw? REPEAT 5...

E: REPEAT 5.

ADB: What does that draw?

L: A circle.

E: Oh! I know what we've done wrong Lisa! 40... Oh no. That  
goes into... 40 goes into... 40 goes into 360 nine times.

ADB: That's right, that's right.

E: That's right.

ADB: What does this draw? REPEAT 5.

E: 3 goes into... 5 goes into... 5 times 72

ADB: is? You don't have to work it out, just tell me.

E: I don't know.

ADB: Yes you do.

L: Five 72s

ADB: Yes. Four 90s, three 120s...

E: 360.

ADB: Yes, but look at it! REPEAT 5.

L: REPEAT 5 times.

ADB: What shape does that draw? This is a shape with 5 sides.

L and E: Ahhh... Ooooooh...

L: It draws one duh duh duh duh... like that.

ADB: And you know how big the turtle steps are - very tiny, and  
you've got 3.

L and E: Oh yeah!

ADB: So what does this draw then?

L: A small...

ADB: A very small...

L: Circle.

E: Hexagon.

ADB: No, not a hexagon...

L: 5 sides.

ADB: What's got five sides?

E: Octagon.

L: No, that's eight.

ADB: Do you remember?

E: Heligon... polygon...

ADB: Nearly right.

E: Polygon.

ADB: (to the nearby pair - A and M - working at the computer)  
What's a five-sided shape called?

A and M: Pentagon.

ADB: That's right.

L and E: Ooohuh.

E: You would get it!

ADB: So what are you doing now? What are you going to do to that?

E: Mmmm.

L: Mmmmm.

ADB: What could you change this line to? It's a bit small, isn't it?

E: Repeat mmmmm.....

L: Repeat 15... No. How about 15... How about 15, 20?

E: Repeat. Right then. Repeat what?

L: 15

E: FD

L: 3 RT 24 brackets. No don't press RETURN.

E: I'll do it.

L: I'll do it.

E: I will Lisa.

L: Oooh, you've got sharp nails.

E: Ooohuh.

L: What's up with you?

ADB: Is that right?

L: Yeah.

ADB: That's right. You've got three circles - a small one, a medium sized one and a large one.

ADB: Do you think you could make it better?

E: No.

ADB: You think you couldn't?

E: No.

ADB: That's a bit defeatist, isn't it?

E & L: Yes.

ADB: What could you... Let's have a look at it.

L: Make that smaller... It looks like an old...

ADB: Edit TUNNEL. Now, what could you simply change to make those circles a bit bigger?

L: The number of REPEATs

ADB: Now, if you change this number, you have to change this number as well, don't you?

L: Yeah.

ADB: This is the number of steps, isn't it?

L: Mmmm...

E: Change the number of steps.

ADB: 3 is quite small isn't it?

E: Yeah. 20 20 20.

L: 20. How about...

E: Right then... 20. That's the end.

L: I thought you'd say that. No, don't edit that.

E: 3 space

L: Go back then....

E: Right... Lisa, I've done it!

L: Delete a bit.

E: You don't have to delete a bit... Space... (Quiet workings).  
Lisa, it won't work... You're deleting it.

L: space 2 0. I've done it.

E: Hopefully...

L: Will it fit on the screen? (The largest circle does not).

E: Ooooh.

L: Shouldn't have done the last one. Change the last one to...  
10. Yes because it's too big.

E: Do it to 15 now.

L: Not all of them.

E: Oh no.

ADB: What are you going to do?

E: 15. We're going to change them all to 15.

ADB: All of them, or just the last one?

L: Just the last one.

E: All of them.

ADB: Tell me why you say all of them Everlyn.

E: No, the last one I mean...

ADB: Why just the last one?

E: Because the other two fit but the last one doesn't.

ADB: O.K. go on.

L: Edit.

E: Hold on.

L: Return

E: Clever... (Quiet editing)

L & E: Phew!

E: It's better than before.

L: It's still an elephant's eye though.

E: I like it.

L: It's better.

ADB: What do you think?

E: I like it.

L: I like it. Oh, do we have to do the other one?

E: No, we've decided, no, we don't want to do the other one.

ADB: Do you want to save that one?

E & L: Yeah.

L: Wait a minute. You have to put the disk in.

E: It's a masterpiece! Isn't it Lisa?

L: It's better than the other one. In it goes... S A V E.

E: Lisa! (laughs)

L: Can you move your hand please?

E: Is it TUNNEL?

L: Yes. T U N N E L.

E: Don't bend it!

L: I have to put it in. What are you doing that for?

E: I like doing it (playing with the disk drive arm).  
We're not doing anything else we've decided. We're not doing  
that round one. It'll be too difficult.

L: Yeah, because we couldn't do the other one.

ADB: Tell me why you don't want to do that one.

L: It's too hard.

E: It's too hard.

ADB: How do you know? What's hard about it?

E: Getting that in there and using pen-ups and using pen-downs  
and not knowing where to put them.

ADB: You could draw it on paper quite easily couldn't you?

L and E: Yes.

ADB: If it's so easy to draw on paper, why is it hard to draw on  
the screen?

L: Because you have to use RT...

E: RT, PU, PD...

L: FD...

E: It's easy to draw on paper.

ADB: ...Just look at the drawing, the first circle. You could  
draw that because it's just like one of those isn't it?

L: Yes.

ADB: And you could draw a little circle on its own.

L and E: Yes.

ADB: Have a go... have a go at drawing...



L: Do we have to put them in though?

E: Right then, we're going to do BIGCIRCLE, save BIGCIRCLE, LITTLECIRCLE, save LITTLECIRCLE...

ADB: That's a good idea.

E: Then put CIRCLE in the CIRCLE.

ADB: That's very good. So what are you going to do? You're going to define a procedure for the BIGCIRCLE.

E: TO

L: Clearscreen.

E: Bagsy me first. Wait a minute, we have to write it in our books first.

L: Yes, that's a good idea. TO CIRCLE.

E: TO BCIRCLE.

L: Okay, TO BCIRCLE.

E: Now then,... Repeat. Repeat what?

L: No, you don't have to do Repeat... Oh yes you do.

E: Repeat 120.

L: No.

E: I want the biggest... Repeat 120.

L: No no.

E: I'm doing it Lisa.

L: O.K.

E: Repeat 120. FD how much? 50. Right then. TO Bigcircle.

L: Right then. I've done it. Can I type it in?

E: No.

L: I just want to write Repeat.

E: 120

L: 120 brackets.

E: FD 50 RT 3. I want to save it then.

L: O.K.

E: I'll put the disk in.

L: O.K. RT what?

E: RT 3 brackets. Wait a minute... we've got to... Oh, we haven't put TO.

L: Oh dear!

E: You...

L: I'll do it again... Wait a minute.

E: So that's O.K. Right TO. Why did you do 15 Lisa? Oh yes.

L: TO what?

E: TO BIGCIRCLE

L: Together.

E: BIG

L: BIG? You won't be able to save it.

E: BIG.

L: You don't...

E: CIR CLE

L: BIGCIRCLE. That's a bit big isn't it?

ADB: How many letters can you use?

E: 13

L: 7

ADB: I think it's 6 or 8.

L: 8

E: I thought it was 13

L: 1 2 3 4 5 6 7 8 9 ... [Interuption: "Any more dental forms...?"]  
I know what we could do, we could knock...

END OF TAPE (continued on TAPE No.2:Side B: Counts 000 - 230)

E: We'll have to knock off the "E".

L: It doesn't matter does it?

E: No, BCIRCL. Now remember we haven't got an "E" on it.

L: How much?

E: 120

L: Forward what?

E: 15 RT 90

L: END END END. Remember that... so we dont define it...

E: BCIRCL

L: "L" not an "E"... not an "E"

E: I know. Hurraah!

L: (laughs) Yeah! Now wait a minute. Where's my pencil gone? Someone's nicked my pencil.

E: Right. Save. Now I've got to put the thing in.

L: I'll do the little circle. TO

E: I know...

L: Small circle, SCIRCL, REPEAT... Repeat how much?

E: Shall we do that one?

L: Repeat 5, FD 20... Right, I've got my small circle. (....)

E: I've got the procedure.

L: Yes, I've got it here. TO SCIRCL... Oh, I've forgotten...

E: Doesn't matter... doesn't matter.

L: I wrote it down there... SCIRCL

E & L: Repeat 5

ADB: Which one are you using girls?

E: What? No, that will be too small... If you REPEAT 10.

ADB: What does this shape draw?

E: Hexagon, Lisa!

ADB: Not a hexagon...

E: Pentagon.

L: No, not if you've got that thing... Oh, never mind.

ADB: Try it! Carry on Lisa, do what you think. You can always see.

E: Why don't you put 10 Lisa?

L: Because that's what we've got over there.

E: Well? FD 2?!

L: Oh yeah... 20... RT 72... END.

E: Babsy saving!

L: Okay, wait a minute.

E: I always save because I like putting the disk in. No Lisa!

L: Yes, we've gotta see what it's like.

E: Oh, I thought you were putting SAVE.

L: (groans at the result on the screen) ...think I'll...

E: Forget it Lisa.

L: Edit, edit.

ADB: What's wrong with this one?

L and E: It's too small.

L: Oh, can you move your hand please?

E: TO SCIRCL, REPEAT 5 [FD 20 RT...

L: 50, 50, change it to...

E: No, it's too small then.

L: 50, 50...

E: 50. Oh God! Why did I press RETURN? Right, I'm going to try 40.

L: Right.

E: Delete, delete, 40... it will be twice as big.

L: FD 3

E: SCIRC defined.

L: Oh no, you haven't put FD 3 and 9... Miss, you have to put... She's going like this... REPEAT 40 and left it as it was before!

ADB: What's the problem?

L: She forgot to put that 9 in it.

ADB: She changed the FD, not the number of repeats, didn't you?

E: Lisa...

ADB: Lisa, you see you've got a pentagon because you've got REPEAT 5, so it draws a five-sided figure.

L: No, she edited it... I mean she put 40.

ADB: She didn't change the number of repeats.

E: I only just changed the number of steps!

L: Oh sorry!

E: ...to 40.

L: I thought you were going to change that.

E: SCIRCL. There we go. SCIRCL defined. TO SCIRCL, REPEAT 5 [FD 40 RT 72].

L: Okay.

E: You've done it wrong!

L: I haven't!

E: Not me! [They test it out...]

ADB: Do you know why that drew a pentagon?

L: No.

ADB: If you look at it, what you're telling the turtle to do is

draw a five-side shape that has each side 40 steps long. That doesn't draw a circle does it?

L: Oh no.

ADB: What would draw a circle then?

E: Well, if you made that bigger, that number bigger, and changed that number, and made that number smaller.

ADB: Well do that then.

E: Delete, delete, delete....

L: Delete

ADB: What are you going to change that to then?

E: 10

ADB: What does this number have to be then?

L: 15

E: 10

ADB: And then what's this number going to be?

E: Ummm....

L: 36

E: 16

ADB: 36. Why does it have to be 36 Lisa?

L: Because it is in my book.

ADB: Do you know whythis is?

L: 360... no

E:  $36 \times 10 = 360$

ADB: 36 times ... that's right. (they return to editing).

L: Down, down, down down and again.

E: Delete, delete, delete, right then, that's 36.

L: space.

ADB: And is that going to be too big?

L: No

E: Yes.

L: I don't know.

E: yes, much too big. delete, delete, delete.

L: 20. FD 20 RT 36

E: SCIRCL defined

L: SCIRCL

E: Yeah! ha ha Lisa.

L: What?

E: I've done it!

L: Yes I know you have, so then you can fit them in, can't you?

E: What?

L: Fit them in the circle.

E: (laughs) I'll try.

L: Aren't you going to start?

E: Right.

L: I'll wait for you then.

E: Right then. Big circle... B... I've done it in the wrong place.

L: Oh clever! I know what you could have done first. You could have penned-up and then you could have moved over there! Clever!

E: Shut up! Delete... delete...

L: You could draw the small circle first and then you could move over to there and then you could...

E: No Lisa, I'll do it my way!

L: Okay, do it your way.

E: Right then. I haven't done TO anything...

L: (Sarcastically) Arrrrhh, you'll have to do it all again.

ADB: Do you need TO yet? Why don't you work at the computer and someone writes it down?

E: Right. Oh Lisa, Lisa, Lisa...

L: I'll write it down! I knew you would say that. What do you want to call it?

E: RT 45 RT

L: What do you want to call it?

E: Umm... Everlyn.

L: Everlyn?

E: Everlyn's work!! Huh!

L: Everlyn! Oh, alright, okay.

E: No way Lisa! Call it Hayley!

L: Everlyn Hayley??

E: (laughs) No, just call it Hayley.

L: Why do you want to call it Hayley?

E: 'Cause it will look like her!

L: Very funny. You want to call it Everlyn Hayley...

E: No.

L: ...Lisa, Angela... Do you want to call it all the girls in the class??

E: Yeah. No... Put Shirley...No put

L: Why don't you put EH?

E: Why don't you put S?

L: EHL

E: SBIG get it?

L: Yes, Shirley ...



E: (laughs)

L: Call it EHL.

E: BIG (laughs)

L: What are you going to call it?

E: Umm... Bluetit. To titface (laughs).

L: Just get a move on would you?!

E: To titface. To titface. Right.

L: If you insist.

E: Is titface alright for a name?

L: Everlyn wants to call it that. Everlyn!

E: Shut up. Well, they're called...

ADB: What are you doing?

E: We want to call it...

ADB: Do you want to call it a name yet anyway? Have you worked out what you are going to do? Don't you need to work with the computer first?

E: Yes.

ADB: Before you even call it a name?

E: Titface (laughs). We'll have to call it titface (laughs).

L: Will you get on with it please?

E: If you insist.

L: TO question-mark...

E: And it's going to be called titface.

L: I'll put question-mark.

E: Titface Lisa.

L: How does that relate to the picture Everlyn?

E: 'Cause it does. 'Cause it's a face.

ADB: But, if you were looking at your disk, say in six months time, would you know that that name would draw that shape? You've got to call it a name so that you will know what it is when you look over your file.

E: Question-mark. (She look to the boys from the other group) I know, Spotty-dick! (laughs).

L: (laughs).

Boy: You can get those sort of cakes - spotty dicks. My parents have got a sponge...

E: Call it Moby Dick.

Boy: What do you want to call it that for?

ADB: Come on girls. You haven't done anything for the last 10 mins.

E: Spotty dick.

ADB: Let's see a big circle on the screen. Don't write a procedure yet. You write down what's typed in Lisa.

L: All that's mistakes.

E: Ummm... Big circle.

L: Hang on. Hold on a bit please.

E: I've got the hic-ups.

Boy: Why did you want to call it titface for?

E: 'Cause I do.

ADB: Don't bring it up again, it's just been dropped. Now, Everlyn, what's the next turning to be typed in, Everlyn?

L: RT 90

ADB: Right.

E: RT 90. I did that in the first place Lisa.

L: ... It was a mistake.

L & E: Pen Up.

L: Where do you want the first one? FD...

E: FD

L: How much?

E: 100

L: 100?!

E: Yes, it will only be about to there.

L: You only need it there.

E: 50 then. Right.

L: That's a bit small. Never mind. Pen Down.

E: 75. Write 25 after that FD 50.

ADB: Is that in the right position to draw the first circle?

E: Yes.

ADB: Which way should the turtle be facing?

E: Up that way.

ADB: Right. What do you need to do then? What's that turning?

E: RT 45.

L: No.

ADB: Is it RT?

L: Left.

ADB: Is it 45?

L: No, 120. No, that's for a triangle.

ADB: It should be LT 90 if you want to upright it. You did a right turn there.

E: Oh yeah.

ADB: So now you've got to do a left turn.

E: Yeah, but that would do

ADB: You write down...

L: LT what?

ADB: LT 90.

E: LT 45.

L: LT 90?

ADB: What's wrong with that? Isn't that in the right position to draw the first one?

L: Yes.

E: Yes. SCIRCL

ADB: Before you do that...

L: No, Pen Down.

E: Oh Lisa don't! We've gone all... We've gone all wrong...

L: We haven't. PD.

ADB: It's alright. Lisa's been writing it down.

L: PD. Then small circle.

E: Hurrah!

L: Now PU.

E: Pen Up. I was going to do that Lisa!

L: RT 90 FD something.

ADB: Are you writing these down?

L: Yes.

E: FD

ADB: Where do you want the next circle to be?

E: There. FD 200.

L: Where?

ADB: Is that far enough?

E: No. FD 250. FD 250 Lisa.

L: O.K.

E: 50 more.

ADB: Is that enough?

E: Yes.

ADB: Are you sure?

E: Yes.

L: Yes, I think so.

E: Right then.

L: Put it 50 more. 300.

ADB: Now, what's the turning for it? What do you need to do?

E: LT.

L: Ahhh. '

E: 90.

ADB: Alright.

L: Are you sure it's there? What have you done?

E: Ah! I forgot to put PD.

L: Do another then. LT 90 PD.

E: PD after LT 90.

(Bell rings) (Muffled)

ADB: Where do you want the next one to be? The last one?

L: LT 90

E: LT 90

L: PU FD

(Taped stopped as can't hear L. & E. because of movement in class - end of lesson.)

-----

After Break the computer goes on the blink - the one that had just been mended - the one that E. and L. were using. I swop it with Mr.J2/3's for today - that took until 11 am. No groups came to me in the next hour as Mrs.J4 wanted them to finish writing up their letters to Blue Peter. I looked through the next Session.

CODE: Lf28

After Lunch: E. & L. finishing off.

Then G. & N. when the girls finish. They don't take long. Some tape recording.

George and Norman: Drawing the three circles (problem A).

Writing in books first: They want to use REPEAT 5 [FD 3 RT 72] as, according to their table, that's the smallest circle: but I ask them what shape that command would draw. With some directed comments from me, they realize it would draw a pentagon. They both write down a procedure in their books for drawing the design - N. wants to call the procedure HAPPY; G. wants RING so they compromise and type in:-

```
TO RIHA
REPEAT 120 [FD 3 RT 3]
REPEAT 90 [FD 3 RT 4]
REPEAT 60 [FD 3 RT 6]
END
```

Edited immediately and HT inserted - makes the drawing faster.

They try it out - fine except too small. They make it bigger by changing all the FDs to 21.5 (from last week's work, the biggest circle they found that fitted on the screen used FD 22.5). They try it - the biggest circle is too big.

CODE: Lf29

But using FD 21.5 is fine for the other two. (Actually 22.5 was the biggest circle that could be drawn using REPEAT 90 [FD .. RT 4] - not REPEAT 120).

They edit again:-

Change all the FD 21.5s to FD 18. But the biggest circle - still too big.

Then just the big circle's FD 18 is changed to FD 15 and that is fine.

RIHA is saved.

Drawing B:

They start to write in their book a procedure for the big circle, then RT 90 PU etc. i.e., they don't break the problem into sub-problems. I ask them how many different sized circles there are - "2". I suggest that wouldn't it be a good idea to have a procedure that draws the little circle. They agree. G. writes the procedure for the big circle; N writes a procedure for the small circle: REPEAT 90 [FD 10 RT 72]. Why RT 72 not RT 4? N.

thinks that it will draw a small circle as RT 72 is the turning for the smallest "circle" in his table.

I try to explain to both that this will draw a pentagon, and that using 90 and 72 isn't any good.

CODE: Lf30

It is difficult to explain so I let them type it in: it keeps going over the same lines. I try to explain: they write another procedure to draw a small circle. They type it in. I need to ask them if they have written it as a procedure: they say "yes". Then I ask them what they have called it. They then realize that they haven't written a procedure. G. had been working on a procedure for the whole design but hadn't used any subprocedures. Eventually they do type in procedures for the small and big circles. Now they try out G.'s procedure, using the subprocedures. And apart from having to change a few FDs it is right the first time. They type it in as a procedure:-

TO FACE		
HT	PD	PD
BIG	SMALL	SMALL
PU	PU	PU
RT 90	RT 45	BK 300
FD 100	FD 200	PD
LT 90	LT 45	SMALL
		END

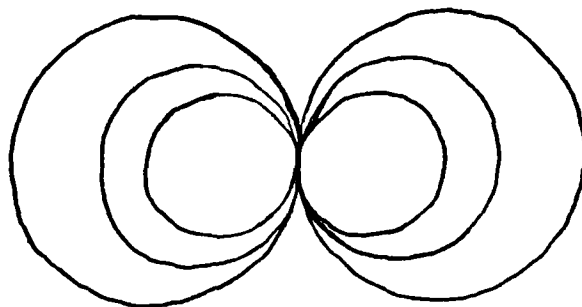
I ask what the subprocedures are in FACE - they know - SMALL and BIG.

I was surprised it worked so easily. There is not long left now so I tell them to experiment with typing FACE in again. They move the turtle about and get two faces on the screen.

CODE: Lf31

And then they experiment with RIHA and draw:

TO EYES  
RIHA  
RT 180  
RIHA  
END



The turning was found with no trouble. They save EYES (G. thought about editing RIHA to draw this, but I suggested that they write another procedure for it and then if they want just one "eye" they'll have it there).

-----  
NOTES ON TAPE.

TAPE No.2:Side B

Counts: 230 - 430

Fieldnotes: Lf28-31.

George and Norman drawing circles  
(Session 12 Activity 6).

Quite a lot of background class noise - hard to hear what's going on.

See accompanying fieldnotes.  
-----

After Break I work with the new ones, drawing their own Christmas related design.

Reflections and Thoughts:

Once again Everlyn's concentration waned - she showed enthusiasm to begin but after the first design she didn't fancy any more - then she came out with the good idea of breaking the problem down - just what I wanted to hear.

G. worked well and successfully. I was impressed with his procedure for FACE - he knew that if he did RT 90 and a move forward, and then PD he needed LT 90. He did this quite naturally.

CODE: Lf32

There is far more to these session "worksheets" than I initially thought - children do take time to do the work and they generally found the second design more difficult - they had problems getting the circles into the big circle.

Also, they used their work on the tables from last week - I wonder if they'd be able to draw the designs without being able to look up their procedures from the week before - I doubt it.

Also, they didn't notice that REPEAT 5 [FD 3 RT 72] would draw a small pentagon - they are absorbed with circles.

At the end of the school day I returned Mr.J2/3's computer .

A agreed not to go in again this term - it doesn't seem worth it - they'll be rehearsing for the play and they break up on Wednesday next week. As it was - when working with E. and L. in the morning the rest of the class were practicing for the play and I had Joseph and one of the wise men!

Also spoke to some of the other kids about the work during the week - some didn't do much (only one computer therefore less



time) - e.g. Shirley - she would have liked more time.

Also, the others need help from Monday's groups. It looks as though kids this age couldn't work completely alone. They do need some help.

CODE: Lf33

This was the last visit made to Longsight this term.  
I arranged to ring during the first week of next term to arrange visits.

DATE: Tuesday 7th January 1986

I phoned the school shortly after 11am and spoke to the Head. I asked him about visiting again. He said fine - as last term. He then told me that the computers were all working, but he would check them. He told me about a series of programs call "The Micro At Work" on Mondays and repeated on Fridays. He said J2/3 were watching them. They are about various things - including robotics. Also, the school has sent for accompanying tapes ("airport control" amongst others) - he plans to get disk copies.

CODE: Lf34

DATE: Monday 13th January 1986.

Arrived at 9.20. Then til Break (10.30) sorting things out. I looked through all the pupils work - most seemed to have had a chance to spend some time working on circles. I also sorted out where to continue with work today and checked some "answers" to procedures. The rest of the class were doing maths work (on percentages). Mrs.J4 was as welcoming as ever - though I sometimes feel it must be inconvenient having a group away from class work during the day. She's a traditional teacher (which is interesting since I'm doing group work with Logo) and class-teaches a lot of the time.

The TV program - Micros at Work - I thought I might watch them - I might in the future as the Head said he forgot to tell me they were on this morning.

Plan of day:

After Break: Lisa and Everlyn.

After Lunch: George and Norman.

After afternoon Break: With Mr.J2/3 and the Head and the "Micros At Work" programs.

CODE: Lf35

Finally spent ~15mins with the "new" pupils, following Session 3.

About the Sessions.

I generally find that the children do need help. If they were to follow them entirely on their own they might well give up with frustration at things they can't do. Also some activities may look rather daunting - but quite often aren't.

After Break: 10.40 - 11.55.

L. & E.

No taping (generally rather noisy and I wanted to get back into the swing of things again).

Session 12: Circles and Arcs.

First, I ask them if they remember what Logo work they were doing at the end of last term - blank faces or a few moments and then it comes

CODE: Lf36

back. A member of another group remembers the circles and L. mentions "arches" - but she admits she can't remember the word - I remind her - arcs - though we haven't started work on them yet.

First I ask them to write a procedure for drawing a circle.

L. & E.: REPEAT 90 [FD 10 RT 4]

They type it in. I ask them what the link is between the number of repeats and the turning. They remember 90 goes into 360 4 times. I ask them if they know what an arc is - they don't - so I tell them - re. Session 12. We then look at the sheet which asks 2 questions - about arcs:

"How many degrees in total does the turtle turn to draw:-

(a) an arc which is a semi-circle

(b) an arc which is a quarter of a circle

With a little discussion they answer correctly - 180 and 90.

Then I tell them to go on with Activity 7. This activity asks them to write procedures to draw arcs which are a half-circle and a quarter-circle. They write:-

REPEAT 45 [FD 10 RT 8]            and

REPEAT 45 [FD 5 RT 8]

But both these draw circles. And they are puzzled by this. I intervene and talk about how a half circle relates to 180 - the number of repeats times the turning needs to equal 180.

CODE: Lf37

They then write:-

REPEAT 45 [FD 10 RT 4]

and E. writes: REPEAT 90 [FD 10 RT 2]

I ask why the second one works too - they say because  $90 \times 2 = 180$

Then for the quarter-circle E. writes very quickly:  
REPEAT 90 [FD 10 RT 1]

But when they type this in, it is too big, so they type  
REPEAT 90 [FD 5 RT 1]

I ask if they can write another procedure that will draw a quarter-circle and they write: REPEAT 45 [FD 5 RT 2] and REPEAT 30 [FD 10 RT 3]. For this second one, I asked what the number of repeats would be if the turning has 3, for a quarter circle and they answer 30.

Then they move on to Activity 8. For the semi-circle they write:  
REPEAT 90 [FD 5 RT 2]. For the next design:-



They see that it starts with a semi circle. They type:-

```
TO SEMI
REPEAT 45 [FD 5 RT 4]
END
```

CODE: Lf38

I don't suggest that they should write it as a procedure but E. asked if it could be saved and must have realized that in order to save it it must be written as a procedure.

However, they are disappointed because they thought SEMI would draw the design. They are puzzled and don't know how to draw the design. I talk to them about the position of the turtle after the first semi circle and discuss which way it needs to turn after that. They see that it needs to turn left. On E.'s suggestion they then type:-

```
TO SEMI2
REPEAT 45 [FD 5 RT 4]
REPEAT 45 [FD 5 LT 4]
END
```

I suggest that they might have used SEMI as a subprocedure instead of typing REPEAT 45 [FD 5 RT 4]. They understand that they could have done this. They save SEMI2 as it stands. Then

they look at the other two arcs. I talk to them about these arcs being less than quarter-circles. The quarter-circle needs to turn through 90 degrees, so these need to turn through less. They try: REPEAT 25 [FD 5 RT 2]. This is fine, though not the same way up. But that's not the important bit. I tell them to look at the same procedure but using REPEAT 30 and then 35 etc. to see that each time the turtle draws more of a circle. E. suggests

CODE: Lf39

writing a procedure and then just using edit mode to change the number of repeats. Good thinking. They type:

```
TO SEMI
REPEAT 30 [FD 5 RT 2]
END
```

However, I thought that it would be useful to see the turtle go over the curve and further on each time so to do this they type:

```
REPEAT 30 [FD 5 RT 2]
PU
HOME
PD
REPEAT 35 [FD 5 RT 2] etc...
```

Unfortunately using edit mode would scrub the drawing. .

They then move on to the turtle "project" - the face drawing. E. groans - thinking that this is going to be really difficult to draw. However, I ask them to look at it and just write down names of procedures they might write as part of the face. E. writes in words in her book: "First of all define an eye then the line then the mouth then the big circle around everything".

I ask what names they would call each of these procedures. They decide to call the whole design FACE and call the subprocedures

CODE: Lf40

EYE LINE MOUTH and HEAD.

They then realize, when I ask them, that the face isn't going to be difficult to draw after all.

E. asks if she can look at the catalogue and call up some of the procedures. They do this for the last few mins.

Comments:

E. seemed really resourceful today and came up with some very good ideas to make things easier.

They can work together well - when one has written something and wants to type it in, the other will often ask "why have you done

that?". I was pleased with the work they did today. They did have some problems though e.g. with the second part of Activity 8, which I think benefitted from some intervention and help from me: it was a difficult problem after all.

CODE: Lf41

After Lunch: 1.10 - 2.20ish

George and Norman: Session 12: Circles and Arcs.

I ask if they remember what they were doing in Logo last term. N. says "circles" quickly. Then I ask them to write a procedure for drawing a circle: REPEAT 90 [FD 3 RT 4]  
I ask them what the link is between 90 and 4: they know that  $90 \times 4 = 360$ , the degrees passed through when drawing a circle. Then we look at the work on arcs in Session 12. They know the answers to the first two questions: 180 degrees in a semi-circle and 90 degrees in a quarter-circle. I ask them to have a go at Activity 7. For the half-circle they type: REPEAT 90 [FD 3 RT 2] and then straight away, for the quarter-circle: REPEAT 90 [FD 3 RT 1]  
No trouble. I ask them if they wanted to draw a semi-circle, what number of repeats would they need if the turning was RT 3. They work it out - 60 (as  $60 \times 3 = 180$ ).

REPEAT 60 [FD 3 RT 3]

This all seems very clear to them.

CODE: Lf42

They then move on to Activity 8. For the semi-circle they type  
TO SEMI  
REPEAT 90 [FD 3 RT 2]  
END

They decide to write this as a procedure by themselves - I think they were looking ahead to the next design and had seen that this is made up of two semi-circles - though not exactly.

They work on this design (the second part of Activity 8). They first try: SEMI RT 180, but they see that this will not work. They then try: SEMI SEMI but this doesn't work either. Then, SEMI LT 45, but this doesn't work either. They are having trouble. I hold back from intervening. They then do SEMI BK 90 SEMI BK 90 and this draws:-



They like this result and decide to do something with it - to make it into a robot or something. They move the turtle about the screen and then write the following procedure:-

CODE: Lf43

```
TO UFO
SEMI
BK 90
SEMI
BK 90
END
```

They edit this, mostly directed by G. and add HT and edit in a missing space and then type UFO. They like the result and think it looks like a dog(!). However, by this time, the group working on the other computer succeed in drawing pattern B:



Inspired by this "competition" they decide to go back and work on that. But they are still puzzled by the problem. I intervene and get N. to walk through the whole path thinking about the way he is turning. Now they realize that for the second part, N. is turning left.

They type SEMI (remembering to use their already defined procedure, then REPEAT 90 [FD 3 LT 2]).

They then write it as a procedure.

```
TO COBRA
SEMI
REPEAT 90 [FD 3 LT 2]
END
```

Again, they remember to use their SEMI procedure as a subprocedure. COBRA is edited and HT added.

CODE: Lf44

G. then looks at the next two arcs on the session sheet and says "what about them Norman?". N. says "Let's write a procedure for them". They type: TO AZ REPEAT 90 [FD 4 RT and then George says "Stop. But RT 1 is the smallest (whole) number you can use and that will draw a quarter-circle". They change it to:-

```
TO AZ
REPEAT 45 [FD 4 RT 1]
END
```

This is fine, and for the second larger arc they type:

```
TO BZ
REPEAT 45 [FD 10 RT 1]
END
```

This works and they are satisfied with these. They then move on to the face project. They express some enthusiasm for this problem. G. straight away types:-

```
TO FACE
REPEAT 90 [FD 22 RT 4]
```

N. asks "why don't we try it out first?". G. types in END, but says, "we can always edit. Put END and work in edit mode". First they type FACE and see that it draws a big circle. Then they begin to work

CODE: Lf45

in direct-drive. G. says "next we need a pen up PU. Write it down" (he works out, in direct-drive first, how many turtle steps across the diameter, and draws in the line nose).

They then decide to call the whole design SUN rather than FACE and use FACE, which draws a circle, as a subprocedure of SUN.

They type

```
TO SUN
RT 90
```

N. says "you should have typed FACE first". So they type END. G. says "you work out the eyes first and I'll do the whole thing." G. works in direct-drive first and then starts to type in the procedure:-

```
TO SUN
FACE          FD 100
PU            PU
RT 90         FD 100
FD 315        LT 90
LT 90         FD 100
PD            PD
```

G. says "now type in your eyes procedure.

```
RT 90 REPEAT 36 [FD 2 RT 10]
```

But the eye is too small. N. edits EYES, but he doesn't have a procedure for it. He decides to write such a procedure because he sees it will be useful.

CODE: Lf46

```
TO EYES
REPEAT 36 [FD 2 RT 25]
END
```

N. changed the RT 10 to RT 25 thinking this would make it bigger. They realize that something is not right and ask how they can make it bigger. I say, they can increase the FD, but if they want to change the angle, as they appear, the number of repeats must

also change. I also say that if they want a bigger circle the size of the angle will be smaller, i.e. the turning won't be so sharp - I try to express this visually, using my hands.

They change the number of repeats and the turning and make a suitably sized eye. They don't seem to mind that it is a circular, rather than an oval, eye shape. They save FACE, EYES and UFO, but they (think they) have to change the name of FACE to FA as FACE already exists and EYES to EY as EYES already exist. It is then afternoon Break.

Comments.

G. and N. were working very well - co-operating and trying hard. I was very pleased to see their use of procedures. They did have problems with COBRA B and I think benefitted from my intervention.

CODE: Lf47

I then spent most of the rest of the afternoon helping Mr.J2/3 and Head transfer programs from cassette to disk. I didn't think much of the "Train" program - rather repetitious. Heard message that one of the micros on loan to Longsight is needed back at the University for a spell.

CODE: Lf48

DATE: Monday 20th January 1986

Arrived at 9:15. Looked at the "Star Chart":-  
Everlyn: 5 Stars  
Lisa: 7 Stars  
George: 9 Stars  
Norman: 8 Stars  
(Max 11, Min 0).

At the end of the day I asked Mrs.J4 about the case study childrens' ability in other work:  
Everlyn: "Could do better. She's got it all up there but doesn't always apply herself".

Lisa: "Works to her capacity - pretty bright". She thought perhaps L. was deteriorating because of a bad influence another girl in the class has. This other girl and L. are best friends - they live next door to each other. This other girl doesn't care about her work and just does the minimum.

Norman: "Very good."

George: "Very good, works hard".

Mrs.J4 thought it would be a good idea to look through their books to get more of an idea of their ability.



The first group came at 9:50. The Head came in at about 10 to ask if I wanted to watch

CODE: Lf49

"Micros at Work". I didn't because I was observing E. and L.

Lisa and Everlyn:

Session 12: Face Project.

Taping: Tape No.2 Side B (but class noisy).

They remembered that they had begun work on the face last week. They look through their disk and load BCIRCL and SCIRCL. They decide that they can use these for the outline and the eye. Now "we want to define an arc, the mouth and a line for the nose". They type in a procedure for the nose. Throughout, L. makes a careful note of the commands in her book. E. does also - not so carefully.

TO NOSE

FD 50

END

NOSE was saved. E: "I'll do the mouth. I've forgotten how you do the mouth shape". They look back in their books. They remember that they have drawn and saved a semi-circle on disk so they load SEMI.

L: "Don't you think it's a bit big? Look at the thingy, the procedure and make it smaller".

E: "But it's upside down too"

They edit SEMI. L: "How do you make it smaller?" After some mins, she answers her own question: "Change the steps".

CODE: Lf50

SEMI now becomes:-

TO SEMI

REPEAT 45 [FD 5 RT 4]

END

They discuss how they might turn the smile up. L. says "Or you could make it unhappy". I talk about the position the turtle is in and suggest that if it started facing down it would draw it the other way up. SEMI is edited to:-

TO SEMI

RT 180

REPEAT 45 [FD 5 RT 4]

END

They want to save SEMI but realize that it already exists. They edit again and change the name to MOUTH and save this.

I ask what they are going to do next: L: "Try and put them in the right place - We'll have to make a big procedure now - what shall we call it?"

I ask if they want to see the turtle drawing it - "yes" - then I tell them not to do TO ... - write it in their books first. They are familiar with this methods but decide on the name and write TO UGLY in their books, but don't type it in. They then work in direct-drive and write the commands in their books. This does often lead to problems because in direct-drive, they realize mistakes and write these down as well, which makes the procedure long and unnecessarily messy. I often help and advise

CODE: Lf51

them what to write down. As a basic example, they may type FD 100, but see this is too long, so do PE BK 40 PD. All they need note down is FD 60.

This is what they do:-

```
[TO UGLY]
BCIRCL      BK 50      SCIRCL
PU          LT 90      PU
RT 90       FD 100     RT 180
FD 300      RT 90      FD 200
LT 90       PD         RT 90
PD          SCIRCL     FD 60
NOSE       PU         RT 180
PU          RT 90      PD
LT 45      FD 300     MOUTH
FD 100     LT 90      [END]
RT 45      PD
```

I help here as the MOUTH is in the wrong position. I erase it and help them place it in a satisfactory position.

CODE: Lf52

Under their own initiative the girls check through the procedures written in their books - E. makes some changes. Now they are ready to type it in as a procedure. They do this.

Then they try it out. There are some bugs. I help by checking through their note of the commands with notes I have made. Still another bug - with some help, they de-bug this and then they save UGLY. They seemed pleased and satisfied with their work. I ask them to make a note of the correct procedure in their books - E. reads out from edit mode and L. writes down. I ask if they'd like a print out of UGLY. They say yes, quite enthusiastically. They finish at about 11.20.

Comments:

L. and E. seemed confident and I feel enjoyed working on this more so than a smaller task. This project had an end product. Perhaps I intervened too much with their de-bugging process but I have learnt, from past experience that it's very easy for them to run into big problems with long procedures - e.g. deleting too much. It is hard for them to locate/relate the commands to the drawing. Subprocedures are so vital e.g. they know the EYES are okay, so the bug must be after that.

CODE: Lf53

E. and L. worked well and I noticed that E. seemed much more able to concentrate today (apparently she was away for most of last wk). E. and L. work well together, I think, particularly on reflection of what Mrs.J4 said - L.'s a plodder - one who sticks to the task and I have noticed that she will often nudge E. and bring her back to the task in hand.

-----  
NOTES ON TAPE:

TAPE No.2:Side B.

Lisa and Everlyn: Worked based on Session 12: Face project.

Counts: 430 - end

Fieldnotes: Lf49 to Lf53.

Can't hear E. & L. very well - Mrs.J4 is clear: illustrates her teaching style - a lesson on long multiplication.

Re. Lf50: TO SEMI REPEAT 45 [FD 5 RT 4] END

[About 560]: E: That was 10 before, so I changed it to 5.

ADB: Tell me, why does that draw a semi-circle then?

L: Because  $45 \times 4$  is ...

L & E: 180

ADB: What's special about 180?

L & E: It's a half-circle

ADB: That's right, that's fine.

E: So, if you wanted a thing of a circle, a quarter-circle, you'd have to times 90... make 90.

[576]

ADB: That's right, make 90.

[663] Ends.

They save the edited SEMI, changing it to MOUTH. Not continued on a fresh tape because of noise level in the classroom.

-----

TRANSCRIPT.

TAPE No.2:Side B.

Counts: 430 - end.

Fieldnotes: Lf49 to Lf53.

Lisa & Everlyn: Work related to Session 12: The Face Project.

(Very muffled because of background noise).

L: Nose.

E: You have to go forward.

L: To... What shall we call it?

E: Nose.... Just a minute, don't write it down Lisa, it might be too big... Yeah, but that will do I should think.

L: Do the...

E: Just a minute.

L: What shall we call it now? Shall we save it? Don't want to save the nose do we?

(muffled)

L: Save... Do you have one of them things at the end? Do you have one of them things?

ADB: Space. You have a space there.

E: Save.

L: What did we call it?

E: No, we called it mouth, not nose...

(muffled)

E: I'll do the mouth. What... I've forgotten how to do the mouth. I'll do what you did then.

L: Yeah.

E: Right then, what is it Lisa?

L: To Mouth.

E: I've forgotten how you do... (Looking back in book).

L: Wait.

E: Come on Lisa!

L: Is it there?

E: I don't know. How do we do it?...

L: You haven't saved it.

E: We have saved it.

L: You haven't. Look... (muffled) Load...

E: Semi

L Load semi.

(Pause. Muffled)

E: Load semi. Semi2 defined. Semi defined. Right, thank you very much.

L: Don't you think it's a bit big? Look at the thingy and then make it smaller - the procedure thing.

E: Yeah, it's upside-down though!

L: Yeah, but turn it up-right.

E: How do we do that Lisa?

L: Just turn...

E: Yeah, but then the whole face will be upside down. Come on silly, you're going upside down.

(muffled)

L: Semi

E: Semi semi

L: How do you make it smaller?

E: De... De...

L: How do you make it smaller? (muffled) That's good enough.

E: We made it a bit smaller.

ADB: How did you make it smaller then?

L: Changed the steps. Don't you think we need it a bit more smaller?

E: No we don't, do we? The face is big enough. That was 10 before

L: That was 5

E: So I changed it to 5.

ADB: Oh, I see... Tell me, why does that draw a semi-circle?

L: Because 45 times 4 is 180.

E: 180.

ADB: What's special about 180?

L & E: It's half a circle.

ADB: That's right, that's fine.

E: So if you wanted to draw a thing of a circle, a quarter of a circle, you'd have to do 90.

ADB: That's right... So what have you got now? It's right, except it's upside down.

E & L: Yes.

ADB: Let's see it again. Think about where the turtle starts. Facing up. Where would it need to start...

E: It faces up so it needs to start facing down!

ADB: Try it!

E: Oh I know... (muffled)... Lisa...

L: Or you could make it unhappy.

E: Right, so it's facing up there. RT 180. And then Semi.

L & E: Weeeeeee...!

L: We could have done it Left so it'd be facing that way.

E: Now all our things are defined now.

L: But we haven't saved it.

ADB: But don't you want to add that to the semi procedure?

L: RT 180    FD umm..

E: Edit space return

L: RT 180

E: I'll do it Lisa!

L: 180.

E: Harrh!

ADB: How do you get rid of a space?

L: Control-C

ADB: But that'll take you out of edit mode. If you want to get rid of something, you just press...

L: Delete.

ADB: That's it. It deletes spaces as well. So go on... That's defined then.

L: You haven't saved it.

E: Right, I'll save them all Lisa.

ADB: Some of them are saved already, aren't they?

L: We've saved them all except the mouth.

E: We saved the mouth, you wally!

L: We haven't.

E: We have. It's already saved. Look.

ADB: But not like that Everlyn. (muffled)

E: Look Semi!

ADB: Have you not changed the procedure?

L: Yep.

E: No.

L: We have. We put in RT 180.

E: And made it smaller.

E: Well? Well, that's all there in the procedure.

ADB: You haven't saved it like that....

(muffled)

E: Save, space...

-----  
Mrs.J4 asked if I wanted another group before Lunch or a rest. I went for the latter - gave me a chance to make a few notes. Also, the editor on one machine was playing up, getting too hot, probably because they had been on constantly since 9.30 and I usually turn them off at Break. I told Mrs.J4 that if anyone had finished their work, they could have a turn. I have a look at what the class is doing; a project on birds - copying drawings from books and writing about them. Some asked whose turn it was next. From looking at their books, I would say about half the class hadn't had a go last week, none seemed to have made much headway with arcs. Apparently, several had been away. I don't think Mrs.J4 puts a very high priority on their Logo work. She never shows much

CODE: Lf54

interest in what they are doing there. I wanted to show her the faces the groups had drawn today, but she didn't seem approachable or particularly interested, and she's a "traditional" teacher, she might not have thought much about the faces anyway.

During the Morning Break.

I spoke to Mr.J2/3 and the Head. I told them that one of the computers on loan had to be returned for a spell. The Head was very good about it - realized that it wasn't his to keep - though I felt a bit awkward about.

CODE: Lf55

After Lunch:

George and Norman: Session 12: face project.

Taping for first 30 mins: TAPE No.3:Side A.

Returned to class - N. & G. were at the computer ready. They knew what was ahead as they'd see others that morning.

G. & N. look at their catalogue and load EY and FA - procedures for eye and outline of face saved from last week. Without help



or suggestion, they write a procedure for nose:-  
TO NOSE  
FD 150  
END

This is too long - they edit it changing the FD to 100. They load SEMI from their disk - for the mouth. Now they have all their subprocedures defined. They type TO SUN. G. says it can always be edited after, i.e. they choose not to work in direct drive.

CODE: Lf56

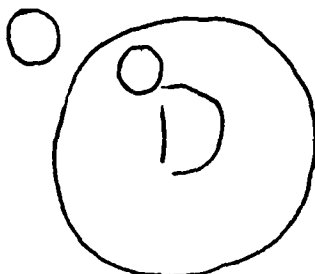
But SUN already exists so they edit it to find it just does RT 90. They erase this and continue typing in edit mode:

```
TO SUN
FACE          LT 90          EY
PU            FD 100         PU
RT 90         RT 90         RT 180
RT 315        PD            FD 250
LT 90         EY            RT 90
PD            PU            FD 100
NOSE          RT 90         LT 90
PU            FD 200        SEMI
FD 100        PD            END
```

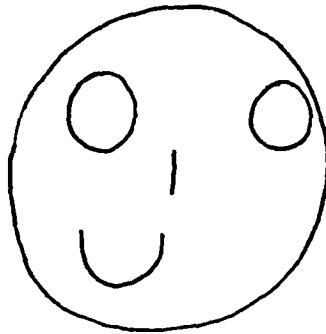
They type SUN and it draws a buggy face: (sketch)



They edit it and it draws: (sketch)



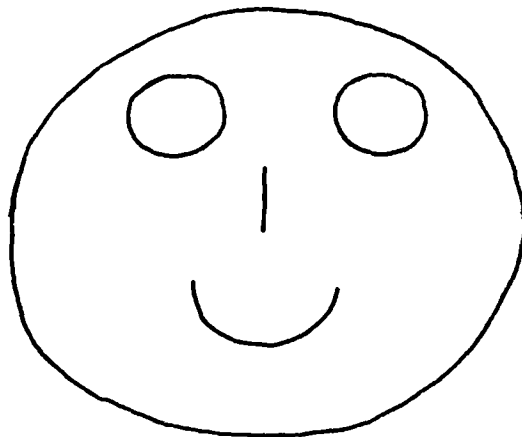
They laugh at the results. G. gets concerned though, and peeps through his fingers - they are both pessimistic after editing and nearly always say "I hope it works, but I doubt it will". Two or three more edits gives them:



I direct their editing a little but the initiative comes from them.

CODE: Lf57

Finally, they succeed in de-bugging it and it draws:



Comment:

None of the groups tried to get oval eyes as the drawing on the sheet suggests. They are more than satisfied with round eyes.

It didn't take them a great deal of time to do this, so I ask if they want to add anything to the face. [396]. N. "yeah, UFO as his bow-tie". UFO was a procedure saved from last week. Leaving the face on the screen they work in direct drive, G. noting down the commands. This is their decision.

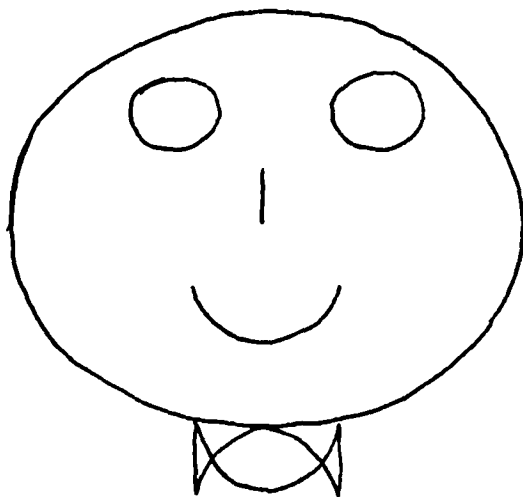
PU BK 220 RT 90 FD 120 LT 175

They change this last command to LT 275 - I'm not sure why - this doesn't give a quite straight bow-tie. I suggest that it should be LT 270 and explain that this is the same as RT 90. They add this to the SUN procedure but FD 120 is not far enough across. They do some editing and position the bow-tie correctly. Then they add a command at the beginning to make the drawing move up the screen a bit as the tie had gone off screen slightly.

CODE: Lf58

[655]. They save SUN and I ask them to make a copy of the correct procedure in their books.

TO SUN			
FD 50	NOSE	PU	FD 250
HT	PU	RT 90	PD
FACE	FD 75	FD 250	SEMI
PU	LT 90	PD	PU
RT 90	LT 165	LT 90	BK 220
FD 315	RT 90	EY	RT 90
LT 90	PD	PU	FD 175
PD	EY	RT 180	RT 90
			PD
			UFO
			END



They are very satisfied with the result. I ask if they want a computer print out of this. They do. They then look through other saved procedures and ask if I could print some of those out too. I agree to.

-----  
NOTES ON TAPE.

TAPE No.3:Side A.

George and Norman: Face drawing.

Counts: 000 - 396+

Fieldnotes: Lf55 to Lf58.

Difficult to hear G. & N. over background class noise and Mrs.J4.  
Improves after a few mins when class has settled down.

[40] G. & N. typing in the SUN procedure - partly composing the  
procedure in edit mode - no direct drive. G. working out the  
commands and N. typing.

[94] G: "I bet you this is wrong". It is. Laughs at results.

De-bugging.

They edit all the bugs they can find in one job lot, rather than  
doing a couple and trying it out as they go along. The procedure  
requires several edits but G. & N. persevere. I assist also.

[396] They finish de-bugging the face and decide to add UFO.

G: "Where does the turtle end?"

This is good.

Through out, they are absorbed with their work.

-----  
After Break.

I do some work with the "new" ones (PU PD PE) and then I ask  
Mrs.J4 to send anyone who has finished their work and did not  
have a go last week. This she does - 3 boys - who work on  
circles and arcs for the last 25 mins.

CODE: Lf59

Other Comments:

Generally things are working out well at Longsight. I wonder how  
much my notes are purely descriptive, but I think I am getting an  
idea of the problems and pluses of Logo. The case study pairs  
are interesting - G. & N. are doing better than I anticipated -  
maybe it would have been good to have studied a group that had  
more problems. But at the time I didn't think G. & N. would be  
especially better than others.

I shall venture and say that I think the kids are making  
increasingly better decisions about their approach to the Logo  
work. Although I do think they need "considerable" guidance.

CODE: Lf60

DATE: Monday 27th January 1986

[My old posters on the turtle commands, REPEAT, Variables, and  
recursion had been pinned up on the walls behind the computers, I  
guess by the Head.]

When the children came out of assembly at 9.45 two boys said  
"Miss, we didn't get a chance at the computer last week, could we  
have a go today?". Well actually they did have a session with me  
last Monday but I said maybe there would be a chance today.  
Generally the children seem keen to have their turn at the

computer.

Lisa & Evelyn: work based on revised Session 14: Variables  
Activity 1: I ask them if they can write in their books a procedure that draws squares of any size using :SIZE as the name of the variable.

They have difficulty with this. They don't seem to remember/know where to put the variables. I suggest that they write a procedure to draw a square first, with sides 100 steps long. They do this easily and then they see where to put the :SIZE in.

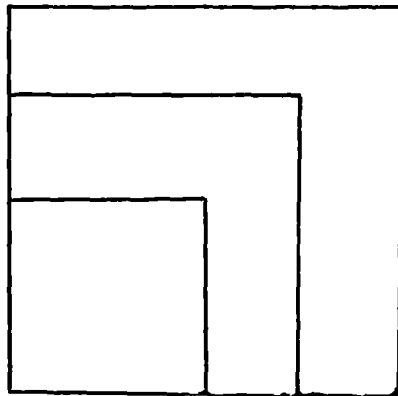
CODE: Lf61

```
They write :-  
TO S :SIZE  
REPEAT 4 [FD :SIZE RT 90]  
END
```

They then type it in, type "S" and are given the error message NOT ENOUGH INPUTS TO S. E. suggests "Edit S", L says "No just S then a number". This works. They draw several squares.

Activity 2 (TAPE No.3:Side B)

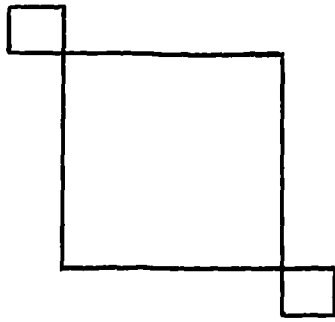
Their initial reaction upon seeing this activity is to groan. They immediately think it will be too difficult. But they get down to things and start on the first drawing :-



S 150, S 100, S 50. This works. They want to make it bigger. I ask them if they can write a procedure for drawing this. They type :-  
TO X  
S 300  
S 200  
S 100  
END

They save this. They complete this activity very quickly.

They move on to the next drawing :-



L: "TO... What shall we call it?"

E: "No, we don't type it in yet" (meaning the title of the procedure). They work in direct-drive.

S 12 "It's a bit too small".

CODE: Lf62

S 45 "That's fine".

"Now turn it "

RT 90

FD 45

S 200 "If we went round the edge we wouldn't need PU".

FD 200

RT 90

FD 200

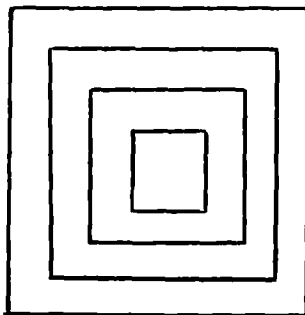
RT 90

LT 180

S 45

L. has made a note of the commands. I ask if they can write a procedure for it. They can, and call it TO AB. It works and they save it.

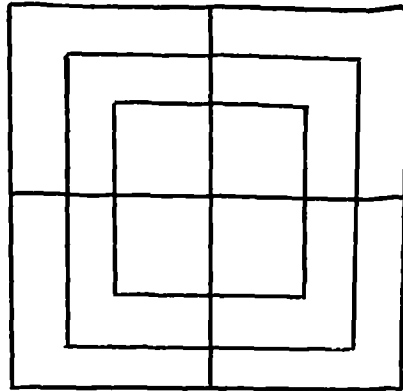
Looking at the next design L says "It's a bit difficult". E. says "But remember we did it before".



They first look at the procedure X and then do:

X LT 90 X LT 90 X LT 90 X

It draws:-



They claim they've done it. But I say that this isn't the same as a the drawing on the sheet: "but it's nearly the same". I say that it is not because it has a cross in the middle and only three, not four squares. I encourage them - break down the design and show them it is easy. So they look at the design on the sheet and type:- S 300 RT 45 PU FD 50 RT 45.

L: "Yeah, look - but which way should it be facing to start the square?". They do S 50, but no PD and L.'s comments are not acted upon, so it was drawn in the wrong place. Then they do: LT 90 PD S 150 - but that square is too small.

CODE: Lf63

By this time the bell had rung for Break but they appear to ignore this. They clear the screen and start again.

```
S 300          LT 90
RT 45          PD
PU             S 250
FD 50          RT 45
RT 45
```

At this point I suggest they have Break and I leave the computer on. After Break I get them to look at RT 45 and LT 90 together - what is it the same as - E. replies LT 45. Then I get them to look again and point out that the five commands after the first square are the same as those between each of the squares "so why don't you write a procedure for them". It takes them a few moments to see the value of this. They type:-

```
TO SD
RT 45
PU
FD 35 -----> changed as FD 50 pushed squares to one corner.
LT 45
PD
END
```

Then they type:-

```
S 300 SD S 250 SD etc...
```

L. has made a note of the commands. They make a procedure of it.  
L. calls out the commands while E. types them in:-

CODE: Lf64

```
TO QC
S 300
SD          Two typing errors were edited out.
S 250
SD
S 200
SD          L: "Good. At last"
S 150
SD
S 100          QC is saved.
END
```

This hasn't taken them very long. Before they go, I let them look ahead to next week's work. L. exclaims "smart!" when she reads that she will be able to make up her own design next week. They finish at 11.05.

-----  
NOTES ON TAPE:

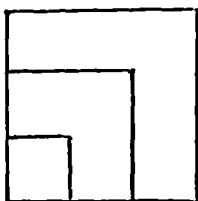
TAPE No.3:Side B.

Fieldnotes: Lf60-64.

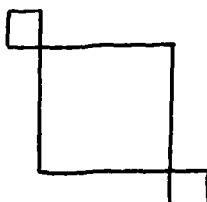
Lisa and Everlyn: Session 14: Variables.

Three drawings:-

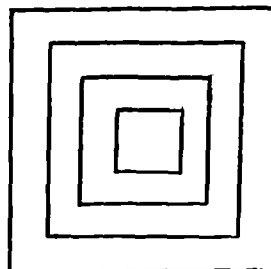
(a)



(b)



(c)



Counts: 000 - 028: design (a).

028 - 088: design (b).

088 - 199: design (c) (stopped at Breaktime)

-----  
Comment:

They worked together well, with some enthusiasm - they were quite prepared to work on into Break. I think they really only needed their memories joggling as far as variables are concerned.



During Break:

Asked Mr.J2/3 and the Head if I could administer an attitude scale to the two top classes. They gave their consent.

CODE: Lf65

11.10 - 12.05: G. & N: Session 14: Variables.

First I show them the print outs of their design. They are pleased with them. I say I'll mount them on paper and put them up on the wall.

I ask them to write a procedure for drawing squares of any size.

G.: "Oh smart, that's easy".

They write and then type:

TO SQ :NUM

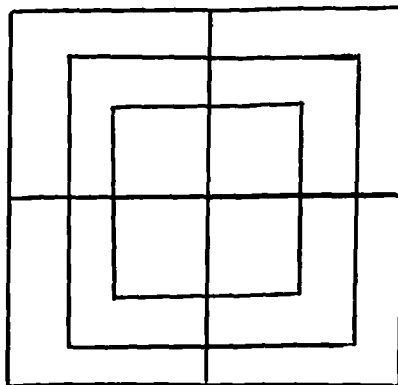
REPEAT 4 [FD :NUM RT 90]

END

They experiment with SQ:-

SQ 50	SQ 50	SQ 50	SQ 50
SQ 100	SQ 100	SQ 100	SQ 100
SQ 150	SQ 150	SQ 150	SQ 150
SQ 200	SQ 200	SQ 200	SQ 200
RT 180	LT 90	LT 180	

On their own initiative they draw this:-



Before pushing them on to Activity 2, I let them finish off the drawing. When they look at Activity 2 they type:-

SQ 50

SQ 100

SQ 150

Which draws it correctly, straight off.

"Shall we save it?" I say "Yes".

Started taping here - see NOTES ON TAPE.

CODE: Lf66

First they call it TO TO but they are faced with the error message TO ALREADY EXISTS. Then they try TO TS, but, TS ALREADY EXISTS. They ask what TS does - I explain - Text Screen. Then they decide on:-

```
TO TUG
SQ 50
SQ 100
SQ 150
END
```

Later they save this. Then straight on to the next design. They don't bother with direct-drive but straight off type:-

```
TO ERTL
SQ 150
FD 150
LT 90
SQ 50
RT 45
BK 150
RT 90
SQ 50
END
```

G: "I forgot PU". They edit ERTL and insert PU and PD before trying the procedure. Then they type ERTL and G. turns away from the screen and says to me: "This is going to be wrong". He really does get involved with the work. He is right. There is a bug. They look at SQ 50 to see the position of the turtle.

CODE: Lf67

N: "It's the RT 45"

G: "No, it didn't go down far enough"

They edit ERTL. G. changes BK 150 to BK 200 and RT 90 to RT 180. At this point N. says "I don't get it". ERTL is tried again but there is still a bug. Edit again and RT 180 is changed to RT 135, by G. This is nearly right but they need it increase the BK across the diagonal. Now their procedure becomes:-

```
TO ERTL
SQ 150
FD 150
LT 90
SQ 50
RT 45
PU
BK 205 -----> This is changed to BK 207 - they're perfectionists.
PD
RT 135
SQ 50
END
```

G. "Can we save them?" "Yes"  
ERTL and TUG are saved.

Now they move on to the next design. They type SQ 50 LT 90  
G: "No, you've got to go back a bit first."  
"Make a name" says G. - he's not going to bother with direct-  
drive:-  
TO MAZE  
SQ 50  
BK 50  
They realize PU is missing so go into edit mode.

CODE: Lf68

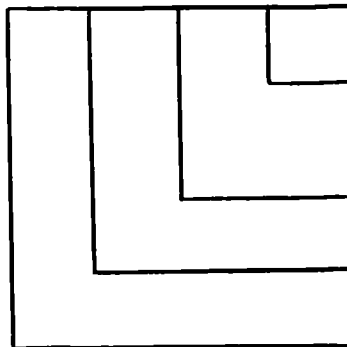
G. then asks me if you can use repeat in this one, or is there  
some easier way to do it. I ask what they intend to do - draw a  
small square then PU, BK ... turn move PD - SQ - then the same  
again - then SQ. They work out that the same commands will be  
needed between the squares, so I tell them that they could write  
a procedure, called MOVE or something to take care of these  
commands. And then the whole design will just be SQ MOVE SQ  
MOVE etc.. They understand what I say and type the following:

```
TO MOVE
PU
BK 50 ----->
LT 90          These are changed to 25 - G. spotted the bug
                immediately.
FD 50 ----->
PD
RT 90
END
```

```
TO MAZE
HT
```

The bugs in MOVE made MAZE draw:-

```
SQ 50
MOVE
SQ 100
MOVE
SQ 150
MOVE
SQ 200
END
```



After the de-bugging, MAZE works. I take a photo - on request -  
they seem well pleased with their work.

CODE: Lf69

They move on to Activity 3, without my prompting. They type:-  
TO TRI :NUM REPEAT 3 [FD :NUM RT 120] END. Then  
TO PENT :NUM REPEAT 5 [FD :NUM RT 72] END. They remember  
both how many sides a pentagon has and the turning. I'm quite  
impressed. They save TRI and PENT. They look ahead to Activity  
4: the project: "Hey smart!" says G. But there is no time now to  
start that. G. asks if he could put a hat on his SUN (the face  
project). I say they can sometime, but it is Lunch time now.  
I'm impressed with G.'s enthusiasm, creativity and ability. They  
end at 11.55.

-----  
NOTES ON TAPE:

TAPE No.3:Side B:

Counts: 200 - end.

Fieldnotes: Lf65-69

George and Norman working on Session 14: variables.

Drawing one: 200 - 231

Drawing two: 231 - 340

Drawing three: 340 - 500.

Very quiet in the classroom so G. & N. were whispering -  
difficult to hear them. Quite a good discussion.

500 - 560: Variable sized triangles.

560 - 608: Variable sized pentagons.

-----  
Comments:

G. is showing himself to be increasingly good at Logo. He seems  
to enjoy the work. He's not a dominant boy and N. has ability  
too, so they work pretty well together.

CODE: Lf70

Lunch-time.

Ask Mrs.J4 if I can administer the attitude scale - that's fine.

1 - 1.30: Attitude scale with J4.

I explained to the class that I wanted to find out what they  
thought of the microcomputer in school and that for this I had a  
"question" sheet. Before giving out the sheets, I made two  
points clear: (1) there are no right or wrong answers (2) they  
must decide for themselves and not copy a neighbour. I explained  
that for each statement they must decide whether they agree with  
it, disagree or are not sure, and put a tick in the appropriate  
box. We did the first few together, then I let them get on with  
it. There was some difficulty with statement number two: some  
thought "yes" for English lessons, but "no" for Welsh and others  
seemed confused by the negativeness and "agreed" when they meant

"disagree" and vice versa. Through out, pupils put up there hands to ask questions. Some less-able pupils were prone to tick more than one box per statement. I helped them with this.

Some children were keen to justify their answers, e.g. one girl (not case study) said she disagreed with the first statement because she didn't think that it was fair for "thick" children not to use the computer. And for Statement 9 she "agreed" because she said the computer couldn't explain, but teachers could. [One boy was absent.]

1.30 - 2.05ish.

The "new" group work through Session 4 on SETPC and SETBG. They seem impressed with the results. They seem keen on covering the screen with lines. I ask them to draw a path on the screen and change the pen colour at every turn.

Break-time: Talk with Mr.J2/3 about attitude scale.

2.30 - 3: Attitude Scale with J2/3:

The class is a mix of 3rd Year Juniors and "bright" second years.

As before, I explain what I want them to do. This time, I work all through the attitude scale with the whole class. A child read out a statement (they were keen to do so) and then I said they must decide if they agreed, disagreed or were not sure, and tick the appropriate box. I made statement 2 a bit clearer by saying that if they disagree, they think that computers can be used in English and Welsh lessons.

They seem to enjoy the exercise and laugh at a few statements like No.18 and No.22.

3 - 3.30: With J4.

The class are doing geography work - on the Artic circle. I wait until 3.15 when Mrs.J4 is ready for a group

CODE: Lf71

to come to me - 2 girls who didn't get a turn last week, and 2 boys who claimed to be having some difficulty. I do some work on circles with them.

At then end of the day I have to return one of the computer set-ups in J4 to the University for a few weeks.

Other points:

The kids seem keen to pose for photos I take.

CODE: Lf72

DATE: Wednesday 29th January 1986

Problems with computer insurance. It seems that now CT has gone, calls go out for the return of equipment.

CODE: Lf73

DATE: Monday 3rd February 1986.

Arrive at 9.20, as usual and spend until 10am organizing myself and looking through the pupils' books: most seem to have had a go at the computer. Later, I have a look through their disks: most have done work on circles and quite a few on variables.

When I first arrived, I was met by the Head: great problems with the heating system which has broken down. The school was very cold. By Break-time the heating system was fixed but almost immediately broke down again. During the period after Lunch and before Break, most classes went home early. By afternoon Break *only about 4 pupils were left in J4, so I went home too - at 2.30.* The whole afternoon period was very disrupted - the kids *were excited about going home.* If the heating system isn't fixed by tomorrow, the school will have to remain closed. And then it's half term, Monday - Wednesday.

Only one computer now. All work on Session 14. (No taping as *generally lots of noise in the background*).

10 - 10.30: Lisa and Everlyn: Session 14.

Activity 3: Writing procedures for a pentagon and triangle with variables - in their books first and then typed: E. typing.

The Pentagon:

"5 for a pentagon?" (I say "yes").

CODE: Lf74

```
TO LE :SIZE
REPEAT 5 {FD :SIZE RT 72}
END
```

For the turning L: asks "is it 45?". They work it out by dividing 360 by 5.

They get the procedure right the first time.

```
LE DEFINED
L: "LE space number"
LE 200
L: "We've done it"
ADB: "good"
L: "Can we save it?"
ADB: "yes"
```

SAVE "LE

L: "I'll type the next one."

E. writes in L.'s book. L. directs the proceedings - as with the last one - but then E. writes the whole procedure down and says "Just copy that".

TO JJ

REPEAT 3 [FD :SIZE RT 120]

END

JJ DEFINED

JJ 566

:SIZE HAS NO VALUE IN JJ

L: "Oh, I've forgotten to put :SIZE in the title".

The procedure is edited, tried and works. It is saved.

CODE: Lf75

Turtle Project: Design some shapes of your own with a variable in them.

I ask them to write down what they do.

They first do: TO DB and END straight away as a variable is forgotten. They edit it but decide to start again from scratch.

E: Right now, before we do anything on the computer, let's turn to a new page.

L: Let's both draw a sketch.

E: What shall we do? Let's do a hexagon and then we'll do lots of little ones inside it. What shall we call it this time?

L: TO... TO... SHEL

E. types and L. writes:

TO SHEL

END

SHEL is edited as a variable is missed off. But they decide to delete it all and start again. L. works out the turning for a hexagon by dividing 360 by 8 (in fact, this is for an octagon).

They type:-

TO SHEL :SIZE

But, SHEL ALREADY EXISTS.

E: No it doesn't.

I intervene and explain - edit SHEL and put :SIZE on the title line. They then continue in edit mode:

TO SHEL :SIZE

REPEAT 8 [FD :SIZE RT 45]

END

CODE: Lf76

SHEL 300.

L: You've done it a bit big.

SHEL 2 00

This draws a tiny octagon and issues the error message  
DON'T KNOW WHAT TO DO WITH 00

E. sees her mistake (space between 2 and 00)

SHEL 200

The bell rings. They save SHEL.

Before they go they talk about what they'll do with their SHEL - something like the first pattern on Session 14 but with an octagon, not a square. E. says "if we save SHEL then call it something else and do it inside". But L. tells her she doesn't have to do that, rather do SHEL 180 - E. sees this (I don't) and jokingly tells her to shut up for being such a clever clogs.

Second group: 2 boys who usually work alongside L. & E. Seen separately as only one computer. Same work as with L. & E.  
Notes made: Lf76 - Lf79.

CODE: Lf79

Third Group: George and Norman: Session 14: Turtle project.

G. & N. \*cat to see if they had written procedures for the variable sized pentagon and triangle - they have.

CODE: Lf80

For designing their own pattern, I remind them to write down their procedures. They are very pleased to be able to work on their own design:-

G: Do you remember when we used to do this in Standard 3?

N: Yeah, it was smart.

(Since resuming Logo work they had not done a great deal of "project work" - more work based on the Sessions).

They load PENT. They are keen to do a spider's web as the group before them had. I say they can if they want to (although I think it would be nicer if they worked on something more original). They type:-

PENT 200    PENT 150    PENT 100    PENT 50    PENT 25    PENT 12.5  
PENT 6.25    LT 90    PENT 200    PENT 150.

G. writes it down. N. tells him that it is his turn as he wrote down the long procedure last time.



11.54: early Lunch time because of the heating system - vane hope that it had been fixed and the classrooms would warm up. G. & N. decide to go for lunch, though I was quite prepared to stay til 12, but before they go they make sure they can continue after lunch.

CODE: Lf81

During Lunch time several children ask if they will have a turn at the computer that afternoon - in fact they don't as they all go home.

After Lunch: G. & N. continued.

```
TO OCT :NUM
REPEAT 8 [FD :NUM RT 45]
END
```

They decide not to carry on where they left off. They want to draw a spider's web still though. They type:

```
OCT 200 RT 90 PU FD 50 PD OCT 150
```

N. types in direct-drive; G. writes down.

They ask me how the previous group drew the web. I don't tell them. They ask if they can draw something else. I say "yes".

They try:

```
REPEAT 456 [FD 289 RT 310 LT 90]
```

Basically they just type anything, aiming to cover the screen.

This draws a type of star shape. I ask what RT 310 followed by

LT 90 becomes. G. says RT 220. I say "or what else, in LT?"

They don't know so I work it out for them - LT 140.

There are also too many repeats - the pattern goes over itself.

They write the following procedure:

```
TO STAR :NUM
REPEAT 100 [FD 275 RT :NUM]
END.
```

CODE: Lf82

They decide to vary the turning to that different shapes can be drawn. They type STAR 220 (this gives the same, but slightly smaller, same result as REPEAT 456 [FD 289 RT 310 LT 90]).

They investigate the procedure further:

```
STAR 20 N: Will it draw the same shape? G: Ey! Smart!
```

```
STAR 200
```

```
STAR 34 G: Let's just fill the screen.
```

```
STAR 67
```

```
STAR 500 I tried to intervene several times, with what I
```

```
STAR 89 thought to be interesting suggestions, but they
```

```
STAR 90 were far more interested in filling the screen.
```

```
STAR 103
```

G: Drat, we should have written them all down and got them to all

go at once. Let's try to remember".  
I had written them down so I tell them. They write it as a procedure, called TO SHAPES, adding STAR 1007 at the end. The procedure takes a very long time because STAR has REPEAT 100 in it. In fact, they press ESCAPE before the end of the procedure.

CODE: Lf83

I intervene and ask if they can find a connection between the number of repeats and the turning. As a result, under my suggestion, they edit STAR to:

```
TO STAR :NUM
REPEAT 360/:NUM [FD 275 RT :NUM]
END
```

They then do STAR 200 and STAR 6 - this doesn't work - nothing interesting is drawn. So they edit it again and change it back to REPEAT 100.

I ask them to look at this: REPEAT ... [FD 275 RT 220].  
I ask them how many repeats are needed to get the turtle to stop when the pattern begins to repeat. They try 40, but this is too many. G. then counts the points on the star - 19 and tries that. They do STAR 220. They edit it again and change it to 18 - this works. I ask them if there is a link between 18 (the number of repeats) and 220 (the turning). Some confusion:  $220/18 = 12.222$  - this is meaningless - they try  $18 \times 220$  (i.e the number of repeats times the turning) - this equals 3960. They don't see any significance in this. At this point I don't explain (3960 divided by 360 is 11 i.e the turtle goes through 11 total turnings to complete the star).

I suggest they further investigate variables. They put another one in:-

CODE: Lf84

```
TO STAR :NUM
REPEAT 18 [FD :NUM RT :NUM]
END
```

But because the same variable name is used, the procedure has only one value that varies (:NUM) so the forward and the right turn will be of the same value. Because of this, they decide to change it to:

```
TO STAR :NUM :SIZU :ANGL
REPEAT :ANGL [FD :SIZU RT :NUM]
END
```

But on my suggestion (their attention is waning because so many children are now leaving for home) they change the variable names to something more meaningful and logical:

```

TO STAR :REPT :SIZU :NUM
REPEAT :REPT [FD :SIZU RT :NUM]
END

```

They then experiment:

```

STAR 47 69 83
STAR 53 78 99 (good, but too big)
STAR 53 250 99
STAR 53 350 99      I try to point out interesting things
STAR 56 789 201      about the results. But they merely aim
STAR 56 789 250      to "wreck the screen" (G.)
STAR 56 787 354
STAR 2345 678 1

```

CODE: Lf85

I then ask if they want to know how the others did their cobweb. "Yeah!". But first, they save STAR. Then I ask if they would like to work in colour "Yeah!" and N. says, "it's good this week".

I use MODE 3 for the colours - big writing but lots of colours. Now for the cobweb; first I say they need to define a triangle with a variable procedure. G. says they can load theirs off disk - this they do. I then say they need eight triangles. They try:

```

TO WEB
REPEAT 8 [TRI 300 RT 45]
END

```

WEB is edited to put in a variable. With a lot of help and explanation from me, the following results:

```

TO SPIDER :SIZE
IF :SIZE < 25 [STOP]
WEB :SIZE
SPIDER :SIZE - 50
END

```

They comment: G: Oh brilliant - this is smart!  
N: Like a program for a game.

I ask them to write the procedures down (TRI, WEB and SPIDER) and talk about the layers of subprocedures. They ask to save the procedure, but I suggest that perhaps they shouldn't as it wasn't really all their own work - they agree. They finish at 3.15.

CODE: Lf86

Comments:

With the SPIDER procedure, I was really only giving them an insight of what could be done in Logo. It was an odd session really because of the general high level of excitement at the possibility of going home early.

In the earlier parts of the session, it was clear that too much intervention from me didn't work with G. & N. - they had their own thoughts and ideas that they wanted to follow up. Also, it was very clear that they enjoyed being given a free rein to write their own procedures for their own designs.

Also, noticed a common "problem" - forgetting to put an input with a procedure with a variable - but this is no real problem because they usually know what is wrong when they get the error message: NOT ENOUGH INPUTS TO...

CODE: Lf87

DATE: Monday 17th February 1986

Arrived at 9.15, with the returned computer set-up (green screen, not colour monitor this time). I fixed it up in J4 classroom. The children were in the class and the lessons had already started - I was surprised - normally they are in assembly. Some confusion of micro set-up - no Logo chip - swapped with the BBC micro in J2/3, with a chip, but had to swop them again as a colour screen is better for other programs and a green one is okay for Logo. This took about 30mins (2.50 onwards). The school can borrow the equipment til Easter.

The class was doing maths work on squared numbers.

First Group: Lisa and Everlyn: Session 14: Turtle project: Design some shapes of your own with a variable in them. Started at 9.55.

L. & E. with the colour monitor (I put it in mode 1 - red turtle on black background - but the girls didn't even notice).

CODE: Lf88

I remind them that they had been working on variables last time I saw them - before half-term. And set them on the turtle project.

(One of the boys from the group working alongside was impressed with the green screen calling it a "proper" monitor!)

E. & L. wrote in their books as they typed on the screen:

```
TO QW :SIZE
```

```
REPEAT :SIZE RT 4]    L: But you haven't put the brackets and  
                        the forward, Everlyn.
```

```
REPEAT 4 [FD :SIZE]
```

```
END
```

It is edited and RT 90 added in the brackets. So they first define a procedure for drawing any sized squares. At this stage they have no idea of an end product - they just try anything, not

planning first. And QW isn't particularly adventurous.

L. types: QW ... PU FD 23 CS

E: How big was the first QW?

L: I dunno.

E: Start again then.

They start experimenting. E. doing most of the typing; L. writing.

CODE: Lf89

QW 45 PU FD 65 PD QW 50 PU FD 60 PD QW 60  
They see a design developing. E: TO Empire State. But they don't write a procedure yet. They continue with:

PU FD 65 PD QW 70 PU RT 90 FD 70 QW 70

E: Damn (no PD). They discuss what to do next.

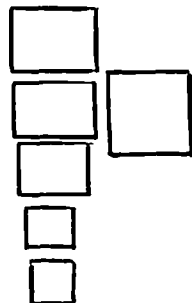
PU FD 70 QW 70 PD QW 70 PU LT 180

Discussion of LT or RT - they have different ideas about where they want the design to go. They swop typing.

FD 200 RT 90 FD 70 FD 10 FD 10 LT 90 PD QW 39 HT

CODE: Lf90

They decide that they have completed their design, but they don't seem very impressed. Look something like this: (sketch).



"It's a gun" (pointing down)

ADB: What are you going to do? Write a procedure?

Not much reponse. I ask them how they might tidy up their procedure. Still not much reponse. I point out that PU FD 65 PD is repeatedly used, and that a procedure could be written to do this bit. They type:

TO EMPIRE

PU

FD 65

PD

END

Then upon L.'s decision, they write a procedure for the gun:

```
TO GUN
QW 45      PU      QW 70      FD 90
EMPIRE     RT 90   PU      LT 90
QW 60      FD 70   RT 90     PD
EMPIRE     QW 70   FD 200    QW 39
QW 70      EMPIRE  RT 90     END
```

But it is not right - buggy.

E: Gurr, I'll thump you! Stupid gun!

L: Edit your EMPIRE.

E: the EMPIRE is right, it's your GUN procedure.

They blame one another, then

E: Stupid computer! when, for some reason, they have difficulty getting EMPIRE in edit mode.

CODE: Lf91

They check the EMPIRE procedure. Nothing wrong with that.

I suggest that they watch the turtle drawing the GUN. They do and E. spots that a PD is missing. She calls L. a "jerk". They edit the GUN procedure, locate the bug, and insert PD.

E: Why did we have to do such a difficult one?

They then check through the procedure against L.'s written version and locate several more bugs. The procedure becomes:-

```
TO GUN
QW 45      QW 70      PD      PU      FD 90
EMPIRE     PU      QW 70      RT 90    LT 90
QW 50      RT 90     EMPIRE    FD 200   PD
EMPIRE     FD 70     QW 70     RT 90    QW 39
                                           END
```

E. carefully edits, and L. reads from her book. QW 60 and EMPIRE are added before the first QW 70. When they have finished:

E: If it's wrong Lisa, I'll kill you!

L: I can't help it - this is what I've got down in my book.

Fortunately, the result is satisfactory.

L: Oh good, I won't have to get killed now.

They save GUN. (They first try saving before inserting their disks)

They finish at 10.35 (5 mins into Break).

CODE: Lf92

Comments:

Lisa didn't seem herself today. I think she had a cold (or had H.'s "bad influence" got to her?). She wasn't at all enthusiastic and seemed tired of it all. I thought it was quite a disappointing session. (No taping - I wonder if it is worth it as the sound quality is so bad, and I do try to catch and write down their comments and what they do).

At the moment, the school has two temporary teachers replacing teachers (Mr.J2/3 and Mrs.J1/2) off sick.

Second Group: George and Norman: Working on own design.  
10.50 - 12.

The groups come to me straight away when they know it is their turn - even before the class teacher gets back (this usually happens with these groups).

CODE: Lf93

I explain what I want them to do - make their own designs, incorporating variables. G. straight way gets out their disk and loads PENT and decides to work this into the new design. ERTL is also loaded and they experiment with this first:

```
ERTL  RT 45  ERTL  RT 45  ERTL  RT 45
```

N: can we use REPEAT?

But they continue to type ERTL RT 45 (5 times in all).

They then write a procedure:

```
TO ERSQUR
```

```
REPEAT 5 [ERTL  RT 45]
```

```
END
```

I ask why they chose to repeat it 5 times. This, G. explains, is because that is what they tried in direct drive. I ask how many repeats would be needed to make it go right round:

N: 8. Or we could vary it.

They edit ERSQUR:

```
TO ERSQUR :REP :NUM
```

```
REPEAT :REP [ERTL  RT :NUM]
```

```
END
```

They then type:

```
ERSQUR
```

```
NOT ENOUGH INPUTS TO ERSQUR
```

```
ERSQUR 8 25
```

I point out that if the two inputs multiplied together make 360 then it will go right round.

CODE: Lf94

They type ERSQUR 10 36

G: Do it again, then save it. (I think they think that a particular screen display will be saved. I ask them, but they clearly understand that the whole procedure will be saved rather than a particular design on the screen).

G: Let's make another one.

PENT 100 PENT 50 RT 72 PENT...

G: Can we have PENT 50 and PENT 100 in the same repeat?

ADB: Yes.

But then G. says "Let's draw something and try and work it out", i.e. he sets himself a design to draw - a challenge. I find some squared paper - but only one bit so they have to work together.

G: What shall we do?

I remind them that they can draw any shape now, including circles and curves.

They discuss lots of ideas: a map, ship, tumbled down house, a submarine.

They discuss further the sub - which way could it be going - left, right, diagonally up right, diagonally down left, or "coming towards us"..

They decide to draw one coming towards them. They ask if they can have a blue background to

CODE: Lf95

represent the sea. I change the mode to SETMODE 2 and find the blue (SETBG 4) and SETPC 2 for a yellow pen, as they want a yellow submarine.

But they then end up not working together. N. starts working in direct-drive, drawing what he changes, to be a ship. G. meanwhile writes down the commands for drawing the sketch of the sub. I first think they are working together but then realize they are not when G. calls me over to ask about an angle. I ask them what they are doing. N. says he's drawing a ship as it will be easier. A few mins pass. N. continues drawing his ship in direct-drive; G. continues writing down the commands for his sub. G. calls me over again and I talk to them - result - there's little point in N. continuing with his ship as he's not written anything down, says G. They both start working on the sub, which G. has sketched on squared paper.

TO SUB

HT	FD 400	BK 150	LT 70
SETBG 4	RT 45	LT 95	FD 25
SETPC 2	FD 25	FD 75	BK 25
BK 300	RT 92	LT 110	RT 70
LT 45	FD 295	FD 100	BK 50
			RT 90
			FD 50

(The first three commands are inserted later) END



CODE: Lf96

Quite a lot of time is spent editing - getting the angles and lengths right. As unusual angles are used, the lines sometimes didn't meet to begin with.

They are pleased with the result and next time want to add fish, rocks, iceburgs, seaweed etc..

G: We can write separate procedures for each of them and call the whole thing Undersea or something.

They seem really keen on this. They can continue it next time. (Actually at 11.55 they finish their SUB and want to start on the other procedures, but I suggest that as there are only a few mins left, they might like to add a bit more to the SUB - this they do). Also, I tell them that they can think about what objects to add during the week. They save SUB.

Comment:

G. & N. are an interesting group to study (well, particularly today, though admittedly, they did have longer). G. particularly seems to look for a challenge, whereas E. particularly, likes to go for the easier thing and is discouraged by anything

CODE: Lf97

that looks too complicated.

It was interesting to see what they did given a free rein. G. & N. immediately looked through their disk and called up an old procedure and investigated that, and when "bored" by that, they quite quickly set themselves a challenge. L. & E. on the other hand, showed little enthusiasm today and reluctantly set to work - only writing a procedure to draw squares of different sizes and their GUN procedure.

I think that some children are more resourceful than others (e.g. G.) and benefit more from open learning situations. Others need more direction - and some don't really seem able to think up much for themselves. This has implications both for the traditional and the progressive approaches.

The Rest Of The Day:

12 - 12.30: Lunch in the staff room.

12.30 - 1: Looking through children's disks and talking to them.

12.55 - 2.10: 2 groups of two boys: working on variables which turn into maps/plans.

CODE: Lf98

After Break: The "new" ones - learning to use REPEAT (Session 5). But also time spent with the Head moving computer set-ups about.

CODE: Lf99

DATE: Monday 24th February 1986

Arrived at about 9.15 and went along to J4. Once again, no assembly, the class was beginning to get organized for work.

First Group: 9.35: Lisa and Everlyn.  
Starting Session 15: More About Subprocedures.  
(No taping. Some photos).

They follow through the session and I consciously try to intervene as little as possible. The first thing they have to do is to call up a procedure for drawing a square. They put their disk in and \*CAT.

E: I'm going to write all these down in my book:

BCIRCL	AB
FLAG	EMPIRE
HOUSE	GUN
LE	JJ
NOSE	MOUTH
SCIRCL	QC
SEMI2	SEMI
TUNNEL	SHEL
UGLY	X

L: Which one was a square?

E: I don't know what you are talking about.

L: We have to call up the square.

E: We'll have to try them all.

L: No... .. wasn't a square.

E: No, let's try them all.

They SETMODE 3 - But I change it back to 1 as 3 isn't appropriate. They SETBG 2 (yellow).

CODE: Lf100

E: Do we have to load all of them?

L: No, we know SEMI's not a square.

They begin to look through some of their procedures.

LOAD "FLAG

FLAG

CS

LOAD "HOUSE     L: That's got a square in it, we could edit it and  
                  see what the square was. (But this isn't followed  
                  up)

LOAD "LE

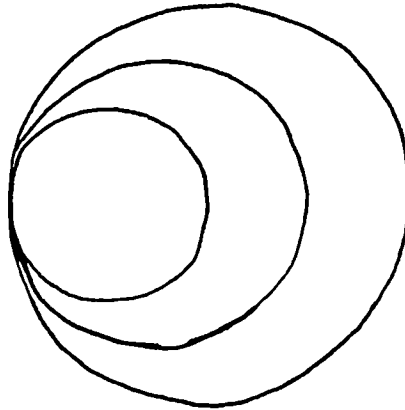
LE

NOT ENOUGH INPUTS TO LE

EDIT "LE

I ask what shape the procedure draws - L: I don't know.

I tell them to look at it.  
 L: Oh, a five-sided shape - a pentagon.  
 LOAD "NOSE  
 (That defines several procedures - they try them - no square).  
 E: Let's see this. Let's see our clever work. Isn't that  
 clever.  
 It draws:-



LOAD "SEMI2  
 E: Oh, look at this.  
 L: That's nice, but it isn't what we're looking for.  
 LOAD "SEMI  
 LOAD "X  
 X defines S too.  
 L: S draws a square. But S wasn't even in the catalogue. Why is  
 that?  
 I suggest that they edit X. E. asks why.  
 I suggest that maybe S is a subprocedure of X, so when X is  
 loaded, S is too. And that is the case.

CODE: Lf101

Their square (S) has a variable in it. The next part of the  
 session asks them to look at the prompt (?) whilst the square is  
 being drawn, and explains that control passes from the user to  
 the procedure. They look at this and read on further. They are  
 next asked to draw the trail the turtle would leave when SHAPE is  
 called:

TO SHAPE	TO BOX
FD 50	REPEAT 4 [FD 60 RT 90]
BOX	END
FD 75	
RT 90	
BOX	
END	

They draw the trail but both are wrong - I was somewhat surprised  
- but all the children I saw tackle this problem didn't succeed.

E. & L. type in the commands to see what happens. I have to  
explain why it drew what it did.

E. loses concentration for a few mins and types in her name - but  
deletes it before pressing return. I ask them to read on and  
find out what to do next. They have to look at this procedure:

```
TO FLAG
FD 100                How many subprocedures in FLAG?
SQUARE                L: Two
FD 40                 E: Two (no trouble)
TRIANGLE
HT
END
```

CODE: Lf102

They then type in the following procedure:

```
TO THREESQUARES
SQUARE 40              L: I didn't know you could have a title
SQUARE 60              that big.
SQUARE 80
END
```

```
SQUARE 40              L: Write SQUARE, not S
                        E: I'm not writing S Q U A R E.
```

\$ is typed instead of 4. The shift-lock had come on.

E: We'll have to END and then edit.

EDIT "THREESQUARES

They type in the rest in edit mode.

THREESQUARES DEFINED

I DON'T KNOW HOW TO SQUARE IN THREESQUARES

L. & E.: Why?

ADB: What was your procedure called for drawing a square?

E: S

ADB: Yes, so you can edit now and change SQUARE to S.

E: (to L.) I told you so!

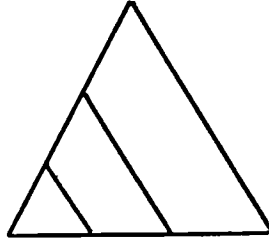
(E. doing most of the typing, as usual.)

It works.

CODE: Lf103

Activity 4: Look carefully at how the THREESQUARES procedure was built up from SQUARE :SIZE.

Write a procedure to draw this pattern:



E: "Oh, I don't believe it. I don't mind copying from paper but I don't like using my brain".

I point out the similarities between the THREESQUARES program and the one for the triangles, to be written.

They write and type:

```
TO TRI :SIZE
REPEAT 3 [FD :SIZE RT 120]
END
```

The girls type in their procedure for drawing the procedure for triangles of increasing sizes. And then write a procedure for the whole:

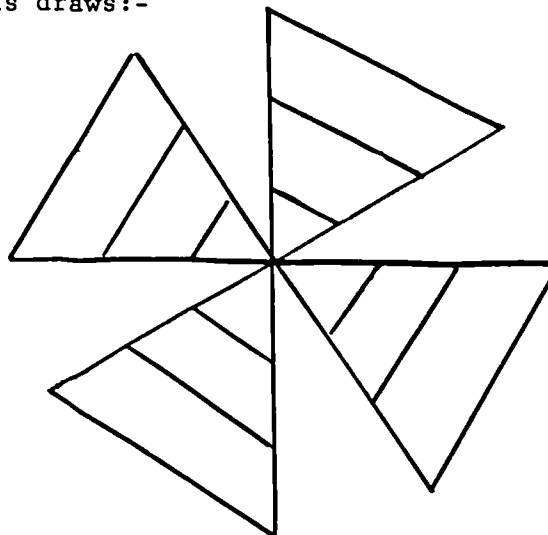
```
TO KR
TRI 40
TRI 80
TRI 120
END
```

That's fine, but not the right way up. I suggest they add a turning at the beginning. They try RT 90 first. That's not right. They try LT 90. That's right.

CODE: Lf104

E: Let's make a pattern.

KR KR KR KR. This draws:-



L: That's nice. Let's write a procedure for it.  
TO POT  
KR  
KR           ADB: Could you make it shorter?  
KR  
KR           They edit, then:-  
END

TO POT  
REPEAT 4 [KR]  
END

They save POT and KR.

10.30: They finish on the bell.

Second Group: 11 am: George and Norman: Continuing underwater scene.  
G. remembers to bring the squared paper with the design. They load SUB (using MODE 2).  
They decide they want to draw the SUB coming through an ice-burg. They start working in direct-drive, on the ice-burg (G. writing the commands down). They put the SUB on the screen first. They type:  
ST   PU    FD 100   BK 50   LT 70 (they ask me about the turning)  
FD 50   RT 90   SEMI (this is loaded from disk)

CODE: Lf105

But the SEMI is much too small. They begin again: (N. typing; G. writing and thinking):-  
SUB   ST   PU    FD 50   LT 70   FD 50   RT 90   LT 90   FD 100  
RT 120 (they decide they want a triangular roof to the ice-burg, instead of a semi-circle) PD   FD 300   PE   BK 300 (too long)  
PD   RT 40 (G: We want a sharper turning now. Let's draw what we're going to do. Let's draw it on paper first) FD 300   RT 90  
FD 800 (too far) PE   BK 800   PD   FD 550  
G. draws on squared paper.  
N: George, I think it would be better like this.  
G: Let's do it like this, it'll be easier.  
N: You're just lazy, George.

They can't agree on the outline of the ice-burg.

CODE: Lf106

LT 120   FD 100   BK 100   RT 120   BK 550   LT 90

This takes them back to an earlier point.

G: That's all extra writing, it would have been easier to make that line longer to begin with.

N: But I want to see what it looks like (in direct-drive).

G. rubs it out and writes it again.

RT 90

FD 550 (returning again)

LT 120            FD 400            FD 500

FD 550            LT 90            RT 120

LT 90            FD 35            FD 200

FD 50            RT 90            RT 90

PU            FD 300            FD 100

LT 90            LT 90            LT 120

FD 300            FD 71            FD 125

LT 45            PD

So now G. has a copy of the commands for drawing an ice-burg. I ask what they are going to do next. G.'s reply is "write a procedure for the ice-burg". I ask them to check through their procedure to see if it can be tidied up. They have already done this, but they do read it through. They start writing out their procedure.

CODE: Lf107

TO ICE

PU

END

The pen colour is changed to white for the ice-burg. They type the rest of the procedure in edit mode. They then decide they want flashing light blue and white ice. But they settle for flashing black and white (as there isn't flashing blue and white). G. wants to change the colour of the SUB too:

EDIT "SUB

SETPC 13 - flashing purple and green.

TO ICE (working in edit mode)

PU            RT 90            FD 300

SETPC 15            FD 100            LT 90

FD 50            LT 90            FD 71

LT 90            FD 50            PD

FD 150            PU            FD 500

RT 160            LT 90            RT 120

PD            FD 300            FD 200

FD 300            LT 45            RT 90

RT 90            FD 400            FD 100

FD 550            LT 90            LT 90

LT 120            FD 35            FD 125

FD 550            RT 90            END

That works (they are satisfied with it). Photo taken. They want

to add fish. I suggest they draw them on squared paper first.  
They do. They draw: (sketch)



I suggest they might draw: (sketch)



CODE: Lf108

G: Oh, yes, it is like UFO.  
They look at their SEMI procedure. They need to make it small  
and less of an arc.  
TO FISH  
SETPC 14  
REPEAT 80 [FD 1 RT 2]  
END

This is edited to:  
TO FISH  
SETPC 14  
BK 55  
LT 30  
REPEAT 80 [FD 1 RT 2]  
END

These FISH are too big and not right. I helped/intervened  
perhaps too much.

They suggest doing straight lines as eels. I ask if they have  
eels at the North Pole (the setting of their scene). Anyway,  
they'll think about fish during the week. They add PU and BK 400  
to ICE and then do:

TO POLE  
SUB  
ICE  
END

They save POLE as the bell rings for Lunch.

CODE: Lf109

After Lunch:

1.30 to afternoon Break: the "new" ones: using REPEAT, drawing  
squares and a simple house. Coming along fine.

2.35 - 3.35: 2 groups working on variables.

Noticed one problem one group had (less-able): Several procedures  
were defined for drawing squares of different sizes correctly,



but each time they saw the error message: NOT ENOUGH INPUTS TO SQ, a fresh procedure was written.

During this final session I looked over some of the work done by G. & N. A few weeks ago I asked Mrs.J4 about the case studies' ability generally. She suggested that I looked at some of their books, so I did today. Mrs.J4 asked G. & N. to show me some of their books - "because Miss wants to write a story about you" (wish she hadn't said this - but G. and N. took no notice and were eager to show me their work).

CODE: Lf110

Background Information: G & N's Maths and English books.

N.'s Maths work: Very good - excellent - nearly all sums right. Very neat too. Most recent work on calculating circumferences using Pi.

Mrs.J4 expressed that N's Maths work was very good. N. said that maths was his favourite subject.

G.'s Maths work: Very good also - excellent. Again, nearly all the sums right, neat too. Again Mrs.J4 said that G.'s maths work was very good. And G. said that maths was his favourite subject.

For maths, these boys seemed equally matched for ability, and their ability seemed great.

G. & N.'s English work: Again both seemed equally matched and their work was very good. Neat and grammatically correct. Improving as well, it seemed.

These boys are good workers and their ability is great. Mrs.J4 seemed pleased with them. (Their ability turned out to be higher than I anticipated when I chose them to study).

CODE: Lf111

Note: During Lunch Break I talked to some girls in the class. They had fallen out with H. ("the trouble maker"). They said that sitting next to her and being friendly with her brought their work down. They echoed Mrs.J4's fears. L. is her best friend. And I have noticed her more recent lack of enthusiasm.

CODE: Lf112

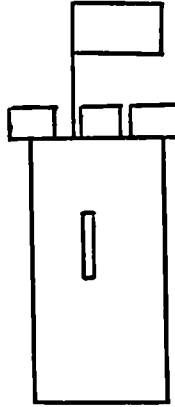
DATE: Monday 3rd March 1986.

Arrived 9.15. Children in class already beginning lessons again. Sorted myself out and waited for Mrs.J4 to finish setting them going on their maths work.

First Group: 9.48 - 10.30

Lisa and Everlyn: Session 16: Using Subprocedures To Solve Problems.

E. came 5 mins late as she was finishing off some maths work. I asked them to read the first page and then explained that I wanted them to work on the castle tower design (end page of Session: Activity 11), instead of the one suggested, as they'd done one similar to that before.



ADB: How many different shapes can you see?

E: Two - a flag and rectangles of different sizes. We can write a procedure with :NUM for the rectangles, and we've got a FLAG procedure on our disk.

[Good thinking: most resourceful].

CODE: Lf113

L. sees that there is also a square.

They seem to prefer to work in black and white. I had set a red pen colour, but they change it to black and white.

They load FLAG and SQUARE from disk. They then write a procedure for the rectangles. I consciously decide not to interfere. It is not easy, but I leave them to work it out.

```
TO REC :SIZE
FD :SIZE
RT :90
FD :SIZE
RT 90
END
```

REC 40. This just draws two sides of a square.

L: You've only done that, you've got to do that again.

E: Oh, no.

REC is edited and the following added:

```
FD :SIZE
RT 90
FD :SIZE
RT 90
```

REC 55. This draws a square.

L: It's more like a square.

E: I know why; we've just done the procedure like a square.

L: Oh, no.

CODE: Lf114

E: You have to do that (pointing at the shape on the screen) as  
a long line, that as a short line, that as a long line  
and that as a short line.

L. types REC 34 56

E: Oh I don't understand it.

L. looks at me.

ADB: Are you stuck?

L: Yes. We can't draw a rectangle.

E: We need a long and short line. If that's 50, that's 25...

I show them that they need two variables, not just one. E. seems  
to think that there is a specific variable called VALUE or  
something. I explain that they can call their variable what they  
like.

E: We could call it :SQ.

TO REC :SIZE :SQ

FD :SIZE	FD :SIZE
RT 90	RT 90
FD :SQ	FD :SQ
RT 90	RT 90
	END

I show them that it could be shortened to:

REPEAT 2 [FD :SIZE RT 90 FD :SQ RT 90]

E: We'll do that now.

L: Do we still need :SIZE and :SQ on the title line?

ADB: Yes. You always need them there.

E: We've done it.

CODE: Lf115

They had edited REC and shortened it using REPEAT.

L: Now we can write a procedure for the whole thing.

ADB: Have you got all the subprocedures.

L: Yes. FLAG SQ and REC.

They work in direct-drive, writing down the commands:

REC 300 150 Too near the top of the screen.

E: It doesn't matter.

CS

PU

BK 150

PD  
REC 300 100      L: It's a bit thin.  
                  E: You did a 150 last time - start again.

CS  
PU  
BK 150  
PD  
REC 300 150      L: Gonna do the window next.  
                  E: No, you want to do all the outskirts first.  
                  (After discussion) L: O.K.

PU  
FD 300  
REC 25 12        (But no PD)  
PD

But it is almost Break-time, so they save REC. I said that they could continue next week. But E. was surprised. She thought they could continue after Break. I said they could

CODE: Lf116

if they wanted to, but they decided they'd need more than a few mins to finish it, so they decide to complete it next week.

Second Group: 10.55 - 12 noon.  
George and Norman: Underwater scene.

They were already getting going when I returned for Break. G. & N. were getting their SUB on the screen - but they couldn't get the colours. They change the mode but the message: LOGO NOT FRESH comes up, so I turn it off and start it again, setting mode first. They then set to work on the FISH for their under water scene. N. asks if they have to do all the other work when they have finished their design. I say "probably not" (the work they are doing is valuable).

The class is working quietly so I tape G. & N.'s work, but later I discover that the first part of the tape is inaudible because the microphone picked up the sound of the monitor. Very disappointing as good discussion was taking place. But the sound quality does improve. Transcribed: (TAPE No.5:Side A) after Lf121.

CODE: Lf117

They type:  
TO FISH  
SETPC 14  
REPEAT 15 [FD 25 PU RT 90 FD 15 PD LT 90]  
END

This draws a line of "fish" - squiggly across the screen -

(because of limitations of the screen). They discuss plans to make a SHOAL. They experiment placing FISH in the underwater scene.

Then they write a procedure:

```
TO SHOAL
RT 15
PU
BK 600
PD
FISH
REPEAT 3 [RT 15  PU  BK 600  FISH]C
END
```

They edit and delete an accidental "C" and add PD in the REPEAT. But it is not right. Their idea of shoal is 4 or 5 lines of FISH going off at an angle. What their SHOAL procedure does is scatter 4 lines of FISH about the screen. They edit again, but it is still not right. They decide that a protractor is called for. Protractor on the screen.

[Mrs.J4 reading out English exercises - more noise]

```
CS  FISH  CS  POLE  FISH  ST
```

They edit SHOAL again, so it now becomes:

CODE: Lf118

```
TO SHOAL
FISH
RT 40
PU
BK 600
PD
FISH
REPEAT 3 [RT 40  PU  BK 600  PD  FISH]
END
```

But it is still not right. They edit again and change the RT 40s to RT 30s.

At this point I intervene and help them. I work with them in direct-drive. One of the problems is positioning the turtle ready to draw the next line of FISH. These move commands have been contained in the repeat.

[Tape off - too much class noise]

CODE: Lf119

We work out the commands for moving the turtle ready to draw the next FISH, by trail and error:

```
PU  BK 30  RT 25  BK 420  PD  LT 25
```

They edit SHOAL to:-  
TO SHOAL  
FISH  
REPEAT 5 [PU BK 30 RT 25 BK 420 PD LT 25]  
END

This is right.

[I turn on the tape again as noise level drops - approx 225 on tape].

They get their SHOAL to work but N. is not satisfied with the position of it. He wants it more to the left. G. does seem happy with the result but works with N. to change it. G. also usefully suggests that doing PU and HOME will help them position the turtle for the new position of the SHOAL.

POLE PU HOME PD SHOAL

That's fine, but they want it further down.

POLE PU HOME LT 45 BK 400 LT 35 PD SHOAL

Now that's fine.

CODE: Lf120

I ask them what they are going to do next.

G: Edit POLE and put them together, but first edit SHOAL and put those commands in.

[He clearly seems to have got hold of the idea of using subprocedures].

They edit SHOAL and change it to:

TO SHOAL  
FISH  
REPEAT 5 [PU BK 30 RT 25 BK 420 PD LT 25 FISH]  
PU  
HOME  
LT 45  
BK 400  
LT 35  
PD  
END

But that is not right. I don't spot the problem, but N. does. The section after the REPEAT should be before the REPEAT. G. decides the best way to remedy this is to edit SHOAL and take these out, then edit POLE and put in those commands after ICE. They do this:

TO POLE  
SUB  
ICE  
PU  
HOME  
LT 45  
BK 400  
LT 35  
PD  
SHOAL  
END

I point out that they could have added these commands to the end of ICE. But they are happy with this. It might have been better had they done this then POLE would be just: SUB ICE SHOAL.

CODE: Lf121

Does it work? Yes.

Earlier, I asked them to explain their design when they had the SUB, ICE and SHOAL on the screen. It uses several dimensions. A submarine, under water, moving through the ice, towards you, with fish swimming to the surface.

I ask if they want to add anything else.

G: No.

N: Yes, seaweed.

They discuss this and G. agrees to add seaweed.

They work on a seaweed procedure.

First, they find a pen colour for green - SETPC 2.

They discuss how to draw the seaweed. G. writes in his book.

N. types in the procedure straight off - no direct-drive:

TO WEED  
SETPC 2 [edited in later]  
PU  
HOME [edited in later]  
BK 300 [changed to BK 380]  
PD  
FD 100  
BK 100  
LT 45  
FD 100  
BK 100  
RT 90  
FD 100  
BK 100  
END

The shape is right, but too long, and they think it will look better black. They edit WEED and change the pen colour to SETPC 16. Then edit POLE and add WEED. They can't do more as the bell rings.

-----  
TRANSCRIPT.

TAPE No.5:Side A

Counts: 000 - 659

Fieldnotes: Lf116 to Lf121

George and Norman working on FISH and SHOAL for their underwater design.

[000 - 160: loud buzzing: inaudible: 160 - 659: buzzing, but some audible]

[163]

G: Peel... CS... FISH

(muffled)

N: Where's the H... Arrh, that's it.

[168]

G: Now do fish. Facing that way. Oh, I see. 40.

N: 15 is there.

G: Oh, it is 40.

N: 45. No. 35. Look, G. it is 35.

G: 35

N: No, go back 30.

G: No, 35 is there. 40. 40 if you want it like that. 30 and it's up over there.

N: I want it there so the fish will go up the sides of the sub. It's 30.

G: They will anyway Procter! Do it 40 and it will go... Edit. Edit shoal.

(Long pause, then very muffled. Typing in commands.  
Intervention from ADB. Tape off briefly as class noisy)

[225] (Microphone moves, gets clearer)

N: Repeat. Shoal.

G: Edit fish.

N: Edit shoal.

G: Edit edit.



N: Am I right?

G: Yeah.

N: Back 30.

G: Oh, we'll just delete the whole thing, yeah? It'll be easier. What have you done?

N: I haven't done anything! You just keep your finger on it.

G: Is that right? Fish yeah. Shoal.

N: PU, BK 30.

G: B K 30.

N: Oh no, I just realized we're repeating it. So what are we going to do?

G: Write a procedure for that.

N: No repeat it... repeat it. No, that, keep that fish there.

G: Fish return. Repeat, how many times?

N: 5.

G: Yeah... 6... 5. Repeat 5.

N: PU

G: PU. Hold on, Pen Up.

N: BK 30 RT 25 BK 420.

G: BK what? 420? Yeah? What' after? PD fish yeah?

N: BK 25 space.

G: 25. Fish... 25 Fish yeah? Do you want to see? Do you want to see? Pol Shoal Fish.... Oooh! I don't know how to!...! Eh?

N: Oooh! Two O's. There's two O's.

G: Because of you... Now then, down. Eh? 30? Oh, I've missed a space there. What was it? RT what?

N: RT

G: Try it.

N: Check through.

[Pause]

N: You've done the same again.

(muffled)

G: They're coming up to the surface.

ADB: Is that right?

G: Yeah.

ADB: Do you want them in that position?

G: Yeah, they're going up to the surface... Yeah, that's right.

N: Yeah, but on that picture you've drawn, they go through there.

G: Yeah, but I want them at the surface.

N: Right.

ADB: I... Let me work this out...

G: Fish don't go in straight lines. (Note he anticipates criticism).

ADB: If those fish are at the surface of the water, right?

G: Noooooo!

ADB: No, they're not?

G: No, they're going towards the surface.

ADB: They're going towards...

G: They're going up.

ADB: Right, they're going towards the surface.

G: They're going up there. There's the surface.

ADB: There's the water surface. And the submarine is coming towards us underneath the water...

G: Yeah, Yeah...

ADB: What's this, is the submarine coming through the ice?

G: That's... Yes.

ADB: The ice is under the water?

G: Yeah, yeah.

ADB: Right. Where's the ice? Is the ice here?

G: Yeah, the black and white one's all ice.

N: No, that's all ice.

G: The black and white.

ADB: All this is ice?

N: Yeah.

G & N: The water, that's ice, that's water.

G: That's ice in water.

ADB: Really we could do with it all to be white, yeah. Oh, I see. Right.

[Pause]

ADB: What do you want to do? You're not happy about the fish. Where do you want them to be drawn?

G: I don't know.

[Pause]

ADB: Could you do that? Mmmm?

G: Yes...

ADB: But you don't want to?

G: No. Oh, I know! PU HOME then start the FISH going up!

ADB: Yes.

N: Oh yeah.

G: Put it in colour. Edit Shoal

N: We got to edit Shoal.

G: Edit Shoal.

ADB: Try it... Just try it on the screen - see what it looks like.

[320]

G: O.K. then, Pen Up, no. CS.

(muffled)

G: Pen Up. ST and see if it's worked.

G & N: Yeah.

G: There it is.

N: Yeah.

G: LT 90. Which way do you want it?

(muffled)

G: Yeah, we do Procter 'cause if we turn it LT 90 it'll be going across like that.

N: Yeah but then they'll be moving up won't they? Right across the screen.

G: So? We can just do the repeat? Just try it.

N: Yeah. LT space 90, 80. Put LT 80.

G: Pen Down.

[Pause]

G: Oh yeah. We need to change Shoal. They are going that way though, aren't they? Look, look at them. They are going that way.

N: But they're missing the ice - that's where I want it. They're going from the ice. They are going down there now. Put it further down. Yeah, that's right. Will it do if they're down there?

(muffled)

G: CS. Write it down.

N: POLE.

G: We'll do it now, after POLE. Put POLE. No, don't put POLE.

Just put PU.

N: Yeah.

G: POLE.

N: BK. It's there now.

G: That's 400.

N: Turn it a bit. Left.

G: Left what? Left 80 yeah?

N: LT 45.

G: Okay.

N: And that'll bring it to there. Then back a bit. How much do you think that will be?

G: 400.

N: That was 200 there. Put that 400.

G: This ain't going to work!

N: So the turtle's there now, facing that way.

G: Now SHOAL. BK 400.

N: No, then, then turn it a bit left.

G: Norman! We've done it... Left 45!

ADB: Last time you had left 80.

N: But we turned it just to get it down there so the turtle's somewhere there now. And then we're going to go up. So 45... LT 45.

G: 35? 45?

N: LT 35.

G: 35 PD PD. SHOAL.... Yeaeh!! Is that alright Norman? Don't say it isn't cause they're passing... the ice has gone. That's a part of the ice.

ADB: Is that alright, yeah?

(muffled)

G: Edit POLE.

N: Join them together.

G: No, edit SHOAL and put that in.

N: Yeah, edit SHOAL and put that in. And then we'll add SHOAL to POLE.

G: Yeah.

(muffled)

G: When we get the time, we can draw a whole castle. When we do the tower yeah, we can do the whole castle yeah. (To me) Urrrrrr, after we've done the tower like that, can we draw a castle?

ADB: Yeah, if you want to. You want to finish one at a time.

G: After this.

N: George's suggestions - he never stops.

[390]

(muffled)

G: Edit Pole... edit Pole.

N: Right, and then after that...

G: ...procedure...

[Pause]

N: Now let's try it.

G: Ahhh! It doesn't work!

(muffled)

G: We put it in Pole, not Shoal... Gotta put it in ICE... Gotta put it in Pole. Pole before Shoal. Then put it in Pole, not Shoal.

ADB: You want to. That's right. It's before it. It's the position of the turtle before it...

N: Put it in after.

G: Edit.

N: Put it in after. In Shoal.

G: Shoal.

N: Further down. This turtle's probably going home now.

G: We've got to delete the PU, don't we?

N: Yeah. Then we want...

G: Control-C

N: To the end of the Shoal.

G: Why? We're putting it....

N: Yeah.

G: We're putting it in Pole aren't we? Edit Pole.

N: Edit.

G: Put it in Pole.

[Pause for typing]

G: PU

N: PU HOME

G: Return

N: HOME. LT 45 BK 400 LT 35 PD

G: Hold on.

N: LT 45 BK 400 LT 35 and PD.

G: PD is that all yeah?

N: Yeah.

G: Procter! Let's hope it's still there. LT 35

N: PD

ADB: Yep, that's fine.

N: Yes, it's going to work, isn't it?

G & N: Yeah....

N: Formation, yeah? For a dance.

G: Spitfires, spitfires.

ADB: Anything else you want to add to it?

[468]

N: Seaweed. Seaweed.

G: No... Shall we go on to something else?

N: No, do seaweed, for the last ten minutes.

G: I want to draw a torpedo!

N: Do seaweed.

G: Okay, just do little curves of green.

(muffled)

G: CS. Red and Blue - no, SETPC. Wait a minute. Let's go through them. 13 remember.

ADB: What colour are you looking for?

G: Mmm green.

N: 13 green and purple, 13.

G: green

N: green and purple 13!

G: Green we're looking for.

N: green and purple against black.

ADB: Isn't it about one of the lower down numbers - 4, 5, 6, - something like that. I'm not sure.

N: Flashing

G: SETPC. Let's have something not flashing.

N: Yes seaweed.

G: I know. It's yellow.

N: It's green.



G: Let's try it.

N: It's green - 200 - I told you it's green.

G: It's yellow Procter. Is that yellow or green?

ADB: I don't know.

N: Green.

G: It's yellow Procter.

ADB: Let's have a look. I'll tell you what we can do.

N: SETPC return

ADB: Oh, it's red. Actually you want the background blue because you want it to be... cause that's the background... What number was the background for the blue?

G: Do you have black seaweed?

N: Black seaweed.

(muffled)

N: You don't have black seaweed.

G: We've got that colour... we've got that colour. We need a black.

N: Where did we get that one?

ADB: What number was that? What's 3 then? That's yellow.

N: I told you! Ha! Ha! Ha!

G: Do a semi-circle.

N: Just do a line. [PAUSE]

Now what? I know what to do. Just do a line like that. Just do the turtle there now. Then turn it, draw it up there and then you turn it and draw it up there.

G: That's a 'V' shape. Why don't you just do a curve, like that?

N: Just do it like that - one up the middle, one there and one there.

G: I've just got a good idea - draw a seal.

N: Urggh!

G: Draw a deep-sea diver! Draw us going for a swim underneath it!

N: Yeah, in the bottom.

N: Come on then. Type it in then. Right, you write something down this week.

G: No, it's your turn this week. So there Procter.

N: SETPC 3. Right, write this down now.

G: TO Fish you want? To Sea

N: To Weed, To Weed.

G: To Weed (laughs). To Weed.

G & N: W E E D. Weed. To Weed.

N: Right. PU BK how much is that? 300? No, it's more than 300.

G: It's a bit... It doesn't matter. BK 300. It's O.K. BK 300.

N: PD.

G: You've forgotten the turning?

N: Doesn't matter. FD FD

G: That'll be a straight line Procter.

N: FD... BK... This is going to be wrong. LT 45 FD 100.

G: 100?

N: And then repeat this so many times, then BK 100 RT 90

G: No. Just do it up there. Put END now and delete up to there. Then repeat it in a different procedure.

N: Yeah. But so far we've only got that all down there. RT 90

G: Wait a minute. BK 100 PD RT 90.

N: RT 90 FD 100

G: What about PD?

N: It's there. It's already down.

G: No! Oh yeah. FD 100

N: FD 100 BK 100

G: Yeah, BK 100. It's just going to be a straight line. It doesn't matter, just try it. END.

N: I hope this is right for all my effort.

G: WEED Weed

(muffled)

G: It's to.. too long.

N: Yeah, it's too big

(muffled)

G: Hey, shall we show...

(muffled)

G: Do you want to see this? CS

N: I'm still... FD 400 400

G: Right, where does it finish?

(muffled)

N: Set number 2. SETPC. 400, I'm going back.

G: Wait a minute. ST. It's there. So the turning... Just put PU and HOME and BK 250.

N: Yeah. PU. No, we'll do another procedure and put that one in it. Right. CS. Now I've got it in the wrong colour. What colour was it?

G: 13

N: Put that in. SETPC 13

G: To

N: To

G: Yeah

N: Yeah

ADB: Do you want that in your new procedure?

N: Yeah. He's going to put it in them. Right then, that's BK 400 BK 400 PU

G: PU. Procter, where did you... Edit

N: Just try Back 400. Delete delete PU BK 400

G: That's too much. 250

N: 250! 300. 300, just do 300.

G: O.K. 300. CS BK 300.

G & N: Yeah.

ADB: Have you edited it?

G: Edit Weed.

-----

CODE: Lf122

During Lunch some pupils worked at the computer.

1 - 1.30: Looked over books - several have worked on Session 15.

1.30 - 2.20ish: The "new" ones: continuing Session 5.

CODE: Lf123

After Break: Another group: working on Session 15.

General Comments:

I was impressed with G. & N.'s work - still showing enthusiasm - keen on what they are doing. G. also suggested, after looking at another group's work, that when he had drawn the tower, on Session 16, he could go on and make it into a castle. They definately prefer to work on projects, rather than follow through Sessions. I think project work is more valuable too.

E. & L. seemed more interested in their work again - drawing a design is more interesting than routine Logo work. I'll ask if they want to extend it next week.

Logo could be used in conjunction with projects in school: e.g. "castles", draw castles on screen.

CODE: Lf124

DATE: Monday 10th March 1986

Arrived at 9.15. The class was just beginning work. Spent time organizing and looking at pupils' books.

First Group: 9.45 - 10.30:

Lisa and Everlyn: Putting the tower together (Session 16).

[Taped most of E. & L.'s work as the class wasn't too noisy -  
TAPE No.5:Side B)

First they load the subprocedures that they had defined last week. They have trouble finding S but they remember S is a part of X and loads when X is loaded. Their subprocedures are: S FLAG and REC.

CODE: Lf125

Now, they begin to put the tower together.

E. tells L. not to define the procedure yet because they need to see what the commands do first, i.e. work in direct-drive:

PU

BK 150

PD

REC 300 100

FD 300

REC 25 12           (They actually got this far last week. L. read these out from her book)

FD 20

LT 90               (S 30 is done first - they miss the turning, so use PE. They try RT 90 first. It is wrong.  
E says "it must be LT 90")

S 30

RT 90

FD 30

LT 90               (They do RT 90 first but decide it's wrong)

FLAG

But this draws the FLAG in the wrong place because they assumed the turtle would start at the bottom of FLAG, but in fact, it starts near the top. I help them sort this problem out. First I think FLAG might be easily edited to make it start at the bottom, but decide to move the turtle on the tower to the starting place in FLAG. They make a note of these commands and then write a program for the whole:

CODE: Lf126

```
TO FORT
PU                      LT 90
BK 150                  S 30
PD  (Edited in later)  RT 90
REC 300 100            FD 30
FD 300                 RT 90    (Changed to LT 90)
REC 25 12              FD 160
RT 90                  FLAG
FD 12                  END
```

They try it out but it doesn't work. They edit in the PD but it is still not right. They didn't react well to this, so I indicate that there is something wrong with their RT 90. L. decides it is not needed, so deletes. And tries FORT again. It is still not right. I suggest that it should be LT 90 - and it works.

L. had written down RT 90, but E. had LT 90 written down, the correct procedure, all along! Care is needed in noting down the commands. And if they had been working together better, this problem wouldn't have occurred or if it had, been easily rectified.

CODE: Lf127

But it was pleasing to note that they adapted the tower design on the sheet to make it their own.  
E: Let's put a little square there... etc.

So the FORT procedure works well, but it is not finished. After FLAG they add:

```
FD 160
LT 180
S 30
RT 90
FD 30
LT 90
REC 25 12    (Not right the first time: they used PE)
```

E. losing concentration - looking about the room.  
L. finishes off whilst E. gazes. L. finishes and says:  
L: There you go.  
She then says:  
L: We need a window.  
PU  
RT 180  
FD 60  
PD (Put in on second attempt)  
REC 15 50 (L: We need the bigger side first.  
E: Looks like a letter-box

They are satisfied with that.  
The FORT procedure is now complete and works.

Lf128

I offer them a choice of what to do next week.

Either:

1. Continue with the next session and work through that.
2. Add more to the Castle Tower: E: We don't want to do that.
3. Make up your own design and do that. E: Yeah, we'll do that.

I ask them to think about what they are going to do next week.

-----  
NOTES ON TAPE and PART-TRANSCRIPT.

TAPE No.5:Side B

Counts 000 - 560

Fieldnotes: Lf124-Lf128

Lisa and Everlyn putting together the Tower design. (Session 16)

[035]

E: Oh stop it you stupid computer... I don't want to see if you're at TOP LEVEL or not! It just keeps... every time you do that it draws a rectangle, it just says, "you're at TOP LEVEL in REC".

ADB: Let's have a look at your.. it draws what you want, doesn't it?...

E: Yes.

ADB: ...Let's edit REC and see what it looks like... You know why, don't you? Can you see why?

L: You've got two ENDS

ADB: Yeah, you've got two ENDS there... Just take off one of those ENDS.

E: I know, it was my fault.

[045]

[050]

L: Oh gosh, you've got to do "TO...". Right then.

E: Right... TO FORT

L: No, we haven't finished doing it yet.

E: You know what we've got to do.

L: Do...

E: Where's my book? Can I just move that back a bit? TO FORT...  
Right. TO FORT. I can't write like that.

L: Why not?

E: 'cause...

L: If you draw two things we're drawing...

E: It doesn't matter.

L: We won't see it though.

E: I know, but we want to see it. To check that everything's  
going right.

L: No...(muffled) TO FORT.

E: Start again. Look you have to put "TO FORT"

L: Yeah but not on the screen.

E: Why isn't anything coming up then?

L: Because I haven't finished it.

ADB: If you're defining it, you don't get the little "?",  
you get the little arrow-head if you're defining it, so you  
should be able to tell.

E: Right... REC what?

L: Right.

E: Just a minute. Can you tell me what's going on? Is it PU?  
What is it?

L: Pen up

E: Right.

L: BK 150  
[079] (and so on.....)

[260]

Everlyn's reaction to "buggy" program:-

E: Oh my gosh. I don't believe it. I'm fed up with this.  
They edit, putting PD. That still does not work.

E: Oh no! I don't know what to do.  
I then intervene - "let me have a look".



[390]

Again E's reaction to buggy program:

E: Hey! What have we done wrong? I don't understand it! It's stupid.

ADB: What don't you understand?

E: It's right here... I don't know what's happening.

ADB: Do you think it's drawn a rectangle?

E: Yes

ADB: You just couldn't see it because it was small!

[560 tape ends]

-----  
Second Group: After Break.

George and Norman: Adding more seaweed to their under water design.

G. said he hadn't been able to get it to work during the week (shows he's been thinking about it).

They decide they want to repeat the weed along the bottom edge of the screen.

CODE: Lf129

[No taping as the class is reading passages aloud and answering questions].

They soon run into problems with OUT OF SPACE.

If fact, getting over these problems took up most of the time.

But before these problems got too serious they decided to define a procedure called MOVE and one called WEED and then repeat these:

TO MOV

PU

This moves the turtle into position  
for drawing the next WEED.

RT 45

FD 100

PD

LT 90

END

But they encounter a problem which they quickly solve. Their WEED procedure includes a move procedure that moves the turtle from the end of the SHOAL to the starting position of WEED.

They decide to edit those move commands out of WEED and put them in a separate procedure.

CODE: Lf130

They then write a procedure:

TO SEABED

REPEAT 13 [WEED MOV]

END

They then add this to their procedure for the whole thing:

```

TO POLE
SUB
ICE          But this won't appear on the screen in a
PU           completed form because the message
HOME        OUT OF SPACE comes up.
LT 45       G. suggests that if they write the commands
BK 400      from PU to PD as a procedure it might solve
LT 35       the problem. I don't think it will, but don't
PD          discourage them because it is a good programming
SHOAL       tactic. They do this so POLE becomes:
M
SEABED      TO POLE
END          SUB
            ICE
            MO
            SHOAL
            M
            SEABED
            END

```

But still OUT OF SPACE problems.  
Trying to over come these problems takes up the rest

CODE: Lf131

of the time. The major problem is that they are working in MODE 2 which allows more colours but at the same time uses up more memory space. I try all sorts of things. I don't understand that when one procedure is loaded off disk it defines many other procedures, some of which are not needed in the design. And all these procedures take up a great deal of memory space.

G. & N. were disappointed when I couldn't get over this problem, but they ask if it could be printed out. I also said I'd take their disk away and try to get over the OUT OF SPACE problems.

I ask them what they want to do next week and they decide that they'll draw the tower and make it into a castle design.

CODE: Lf132

During Lunch Break: I tried to sort out G. & N.'s problem. I tried various things - drawing one procedure at a time, but basically couldn't fix it. In the end, I wrote out all the commands for all the procedures (copied down from edit mode) and typed them in again, re-assembled the whole design and saved it on a fresh disk. That overcame the OUT OF SPACE problems (no unused procedures were loaded).

CODE: Lf133

TO POLE	TO SUB	TO ICE	TO MO
SUB	HT	PU	PU
ICE	SETBG4	SETPC 15	HOME
MO	SETPC 10	FD 50	LT 45
SHOAL	BK 300	LT 70	BK 400
M	LT 45	FD 150	LT 35
SEABED	FD 400	RT 160	PD
END	RT 45	PD	END
	FD 25	FD 300	
	RT 92	RT 90	TO M
	FD 290	FD 550	SETPC16
	BK 150	LT 120	PU
	LT 95	FD 550	HOME
	FD 75	RT 90	BK 380
	LT 110	FD 100	PD
	FD 100	LT 90	END
	LT 70	FD 50	
	FD 25	PU	
	BK 25	LT 90	
	RT 70	FD 300	
	BK 50	LT 45	
	RT 90	FD 400	
	FD 50	LT 90	
	END	FD 35	
		RT 90	
		FD 300	
		LT 90	
		FD 71	
		PD	
		FD 500	
		RT 120	
		FD 200	
		RT 90	
		FD 100	
		LT 90	
		FD 125	
		PU	
		BK 400	
		END	

```

TO SHOAL
FISH
REPEAT 5 [PU BK 30 RT 25 BK 420 PD LT 25 FISH]
END

```

```

TO FISH
SETPC 14
REPEAT 15 [FD 25 PU RT 90 FD 15 PD LT 90]
END

```

```

TO SEABED
REPEAT 13 [WEED MOV]
END

```

```

TO WEED
FD 100
BK 100
LT 45
FD 100
BK 100
RT 90
FD 100
BK 100
END

```

```

TO MOV
PU
RT 45
FD 100
PD
LT 90
END

```

CODE: Lf134

While I was doing this, another group was working on the other computer, voluntarily.

#### General Comments:

These quite structured Sessions are useful for teachers who couldn't possibly spend a great deal of time with the kids. But really, I think the children prefer to work on their own ideas. But they do need help sometimes, and it's more difficult to do if you are not clear what their intentions are, or how they've gone about it. Also, small, simple design are good - gives them a starting point and the opportunity to extend them and make something more.

#### After Lunch:

I spent all the afternoon looking through L. & E.'s and more of G. & N.'s books

CODE: Lf135

as background information for my case studies.

Looked through the books whilst the new group had their computer session.

#### EVERLYN'S WORK

Sums (1)

Least neat and least accurate "concentrate on your work Everlyn".

Sums (2)

Beginning of Fractions: Nearly all right. Generally an improvement in neatness and accuracy.

Sums (3)

Fractions and percentages: Good, virtually all right: very good and neat too.

Maths (4)

Area: Very Good, and very neat - neater than last book. Area of circles: Good

Sums (5)

Circles - Angles: "Very neat".

English (1)

Neatness improving. Lots of exercises, but nothing much creative. Good work. Expresses her own opinion where possible.

English (2)

Comments include "Nice work", "Good work", "Well done, very nice work".

Other books looked at:

Science, History, Geography, Graph-book, Nature.

Everlyn likes English best.

LISA'S WORK

Maths (1)

Mostly all right and pretty neat too.

Maths (2)

"Good work", "Very Good".

Maths (3)

Mostly all right but less neat.

Maths (4)

All right and neater.

Maths (5)

Good, right and neat but last page "untidy".

English

Comments include: "Good answers" but later "I don't like this writing, do you?".

Also spotted that writing about what she did on Saturday L. wrote: "Sometimes I go and play a game on the computer".

English (2)

Earlier comments about hand-writing, but later "I like this hand-writing", and "Keep to your nice hand-writing".

Other books looked at:

Poetry book, Scripture, Science Workshop book, Welsh, Graph-book, History (definitely the best presented work), Geography and Nature.

I asked what her favourite subject was: "I don't know really". She said that she liked Geography and History and Maths. I asked about English - "That's O.K."

GEORGE'S WORK

Other books looked at:

Welsh, Scripture, Science Workshop, Nature (Generally excellent), Geography, History, Graph-book.

NORMAN'S WORK

Other books looked at:

Welsh, Weather-book, Scripture, Geography, Nature, History.

G. & N. are very good, neat workers.

E. has improved in neatness and now her work is very good.

L.'s work isn't quite as good - but not at all bad.

All were keen and enthusiastic about showing me their work, except L. who seemed nonplussed by it all. E. said she wished she could rip out some of her earlier, untidy work - or start again, but did say that at least it showed her improvement.

George and Norman's favourite subject is maths. I asked G. which was his favourite out of the others.

G: I don't really like any - well scripture and nature are O.K. Considering this, he does some very good work.

CODE: Lf136

DATE: Monday 17th March 1986

Last visit for a number of weeks probably. Looked at Session sheets and children's books. Most seemed to have evidence of some "recent" work, although several pupils asked if they could have a go this afternoon. I said I'd see. They claimed they hadn't had a go for a long time.

First Group: 10am

Everlyn alone because Lisa away (hence no taping).

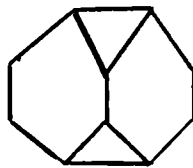
E. working on her own design.

I asked E. and the other group to have a think about what they

could draw - either an object or a pattern. They had difficulty thinking about something to draw. E. decided on a pattern. She starts drawing it on cm-squared paper, rubs out a lot and draws roughly in her book. She asks me if what she has drawn is okay. It is not very interesting so I suggest she looks through a book for ideas of what to draw. But a book is no help.

CODE: Lf137

She settles on this (unexciting) design:-



I ask them all if they can write about what they are going to do. They all seem to find this difficult. I ask E. what she is going to do, and she can tell me, but when she writes about this she attempts to write Logo commands, and then she merely writes a description of the pattern. Finally, after further talk with me she writes:

"First of all I will define the six-sided shape. Then put everything together".

She asks if she can colour in the different shapes within her pattern, drawn on squared paper. This she does. I ask her to keep a record of her work.

[The other group (2 boys) write in words turtle commands - e.g. forward 100. They all have problems about writing what they intend to do. I don't think this necessarily indicates that they haven't got a plan, rather that they don't seem to know what to write, although they can verbalize what they intend to do].

E. works in direct-drive and makes a note of the following commands:

For the six-sided figure:

PU	RT 45	RT 90
BK 100	FD 150	RT 90
LT 45	-----	RT 45
PD	RT 135	LT 45
FD 100	LT 270	LT 45

The commands from the dotted line show E. trying to work out the turning needed. The last LT 45 faces the turtle in the same direction in was in before the dotted line!

CODE: Lf138

She continues:

```

RT 13 5      (I'm very tempted to intervene, but don't)
RT 135
LT 135
RT 45        (This is what she wants)
FD 150
PE FD 150    (Strange...)
PE BK 300    (That's better)
FD 100       (No pen down)
BK 100
PD
FD 100

```

She has very carefully only written down the commands she needed in her book: PU BK 100 (moves turtle to starting position) LT 45 PD FD 100 RT 45 FD 150 RT 45 FD 100. This draws half the six-sided shape.

After Break: E. continues.

E. types in the commands she had noted down. She is working in colour now - her choice. She then continues working in direct drive:

```

RT 90
FD 150      (I thought this should be FD 100, but her 6-sided
             shape is not symmetrical - glad I didn't intervene)

RT 45
FD 75
RT 45
FD 150

```

That's fine - it draws her shape very accurately.

CODE: Lf139

I ask her to write more, in words, about what she has done. She writes that she has defined a procedure for the 6-sided shape and will now have to put the whole thing together. She asks: "Shall I fold it in half and stick it in my book after?" (she had written below her pattern, on squared paper). She is working very carefully and neatly.

She thinks of a name for the 6-sided shape she has drawn in direct-drive and writes it as a procedure, called HEX:

```

TO HEX
PU          RT 45      FD 150
BK 100      FD 150      RT 45
LT 45       RT 45      FD 75
PD          FD 100      RT 45
FD 100      RT 90      FD 100
END

```

HEX is saved.



She now works on putting the design together in direct drive.  
She first tries: LT 90 FD 100 PE BK 100 HEX  
But this is not right.

HEX on it's own is right for the first bit. E. shows difficulty in positioning the turtle for the next HEX - mainly because HEX has commands in it for moving, at the start. I help her work out where the turtle must be, ready to draw the next HEX. Really all she has to do is

CODE: Lf140

HEX followed by some commands that will position the turtle, followed by HEX again. The commands for positioning the turtle provide some problems.

But, first she works out the turtle turning needed to head the turtle in the right direction for the move. She uses a blob of blue-tac, to mark on the screen roughly where the turtle needs to be, ready to draw the next HEX. It is very difficult, so I help. The following commands are worked out after a none-too-small amount of trial and error:

HEX PU LT 180 FD 285 RT 123.5 PD HEX

The whole procedure she decides to call: LJD (Lisa's initials). She seems relatively satisfied with the outcome. We stick the squared paper in her book. I ask her to write about what she did and the problems that she had. She does this: "The bit when I was joining the two six sided shapes together was the only difficult part, other wise it was easy. I think it was all worth it in the end".

Comment:

A lot of problems focused on positioning the turtle ready to draw the next procedure. E. seems to be thinking procedurally, breaking down the problem into smaller parts and putting the parts together. It would have been easier if she had written a procedure for each move, rather than include these commands in the bigger procedure.

CODE: Lf141

I spent part of the Lunch hour and until afternoon Break looking at the MicroPrimer MEP software packs which had recently been returned to the Head. I made a note of the MEP programs. I managed to transfer Pack 1 onto disk for the Head, but some of the programs would not run properly.

MEP: MicroPrimer - A Foundation For Teachers: Software Packages:

[1]  
CRASH (7-14)  
SHOPPING (7-11)

[2]  
VENNMAN (9-11+)  
VENNKIDS (9-11+)

DIET (10-15)  
 LITTER (9-14)  
 MQUIZ (9-15+)  
 QUIZ (9-15+)  
 BIRDS  
 ANIMAL (7-11)  
 FARMER (7-11)  
 HELLO  
 TESTCARD

MISSINGSHAPE (9-11+)  
 GATES (9-11+)  
 TRAINS (6-13+)  
 FRACTIONSSHAP (8-11+)  
 EUREKA (9-14+)

CODE: Lf142

[3]  
 WATCHPERSON (8-11)  
 SPANISHMAIN (8-12)  
 CAT&MOUSE (4.5-9)  
 BRICKUP (9-11)  
 ERGO (10-14)  
 BUILD (5-16)  
 MOREORLESS (6-8)

[4]  
 SHAPESHOOTER (5-7)  
 SHAPEBUILDER (5-7)  
 WHATSHAPE (6-9)  
 SYMMETRY (6-9)  
 ANAGRAM (6-10)  
 BOXCLEVER (6-10)  
 TIME (5-9)  
 SPIKEABACUS (5-8)

After Break: George & Norman: Starting work on tower.  
 (TAPE No.6:Side B + photos).

G. & N. start by loading FLAG from disk. They then write procedures called WIN (a rectangle for the window) and BREK (another rectangle) and BBREK (a big rectangle for the body of the tower). So basically, they define all their subprocedures first. Next they'll have to put the whole thing together. They position the turtle ready for WIN.

CODE: Lf143

They write a procedure in edit mode [150]:

```
TO TOWER
BBREK
WIN
PU
FD 200 -----> (G. continues typing, whilst N. starts drawing an
                  extended tower design on squared paper)

PD
FLAG
LT 90
FD 50
PU
FD 50 -----> (Later edited to FD 25)
PD
BREK
RT 90 -----> (A bug - with some help changed to RT 180)
FD 150 -----> (Changed to FD 125, then FD 100, but still a bit
                  buggy)
```

```

LT 90
BREK
RT 90
FD 50
LT 90
BREK
END

```

After some considerable editing and de-bugging, the procedure becomes:

```

TO TOWER
BBREK          FD 50          LT 90
WIN            PU            BREK
PU             FD 25          RT 90
FD 200         PD            FD 100
PD             BREK          LT 90
FLAG          RT 180         BREK
LT 90          FD 50          END

```

This is fine now.

CODE: Lf144

They now start extending the design. First they argue at some length over N.'s plans which G. says are too complicated (they are rather grandiose).

They define a procedure called WALL which basically moves the turtle from the top of the tower to a position part way down, ready to draw castellations:-

```

TO WALL
RT 90
FD 25
RT 90
FD 200
LT 90
END

```

Then the procedure for the battlements:-

```

TO SPOJ
REPEAT 15 [FD 50 RT 90 FD 50 RT 90 FD 50 RT 90]
END

```

But this requires considerable de-bugging. G. & N. are still trying to de-bug this when the bell goes so I help them (N. goes off to catch his lift home G. stays). The following is worked out:-

```

TO SPOJ
REPEAT 6 [FD 50 LT 90 FD 50 RT 90 FD 50 RT 90 FD 50 LT 90]
END

```

Then finally these subprocedures are put together and saved:

TO CASTLE  
TOWER  
WALL  
SPOJ  
END

-----  
NOTES ON TAPE.

TAPE No.6:Side B  
George and Norman: Tower design (Session 16)  
Counts: 000-659  
Fieldnotes: Lf142-Lf144.

Quality of taping poor - buzzing and lots of background noise.  
Tape starts with G. & N. defining subprocedures.  
Tape ends when they are working on WALL.  
-----

CODE: Lf145

I think G. and N. work well together and they are very good at what they do. It is automatic for them now to break down a pattern and write procedures for each bit. They seem to have mastered the problem of positioning the turtle, though still don't often use move procedures. But they do take in where the turtle ends a procedure. And they have imagination too. They are enjoying extending designs. Generally, I am very impressed with their work.

Mrs.J4 spoke briefly to me. She said that the computer work seems to help the children. She did say that even the slow ones seem to manage it and don't need pushing. I'm not sure she's right. I think they do have great problems but their general enthusiasm has not dropped - they are keen to work at the computer and I think perhaps that she mistook keenness for ability. Anyway, keenness can be a good thing.

CODE: Lf146

I informed Mrs.J4 and the Head that I probably wouldn't see them for a month or so (Easter holidays and USA trip).

CODE: Lf147

DATE: Tuesday 3rd June 1986

Arrived at 9.20 and first of all talked to the Head. He seemed pleased to see me and interested to hear about the USA visit. After 20-30 mins, went to J4. Mrs.J4 was welcoming and asked about USA.

The little computer corner had been somewhat swamped by other things. And there had been a problem with the plugs. The Head had taken them off and not got round to putting them back on. He fixed that there and then.

Spent til Break-time sorting out computer corner and looking at G. & N.'s disk. Second micro not on loan today, so just one. The Head suggested using one from J2/3, but I said not to bother today.

CODE: Lf148

11 - Noon: George and Norman:  
Talking and taping in the library (11 - 11.40).  
Then working at micro (11.40 - Noon).

I asked Mrs.J4 if I could talk to G. & N. in the library because I wanted to do some taping - she said I could do anything I liked - I expressed some concern over the lesson they'd miss - but she said not to worry as G. and N. are good and can quickly catch up. They are "reliable" she said, and will get on well at secondary school.

CODE: Lf149

Talk With G. & N. in the Library:  
First general talk - about football - to settle and relax them before taping. They also chose where they wanted to sit.

[Tape starts]

I asked them about Logo. Did they have any brother/sisters in the school? N. had. I asked them to imagine someone younger in the school who might be about to start learning Logo - this pupil wanted to know what it was like - what would you say?  
See NOTES ON TAPE: "Interview with George and Norman".

Also asked what they most/least liked about Logo.

Then I presented them with a series of designs (located after examples of Session worksheets in Case Record). I told them to look through them and decide which they'd like to work on. They remembered their castle design, unfinished, from before Easter, but also wanted to start something new - good memory though! As they were looking through, I asked them to say something about each - why they were not choosing that (e.g. done something similar, too easy...). They decide on the "olympic" design after

some dispute - N. wanted to draw the "windmill". This was resolved by N. consenting to work on the "olympic" design.

CODE: Lf150

Having decided on the "olympic" design, time was then spent talking about how they'd go about "solving" it. Basically, all the ground work was done away from the micro: all subprocedures were defined.

-----  
NOTES ON TAPE and PART-TRANSCRIPT.

TAPE No.8:Side A.

"Interview" with George and Norman:

Fieldnotes: Lf147-150.

Side A: 000 - 409

[Tape goes with designs which were shown to them; G. and N. talk about them and choose "olympic"]

[000 - 032]

G. & N. talking about Logo in general and the turtle.

G: You have to program things in. This little turtle moves around and draws a picture and you can change the colour of the pen... and the colour of the background. FD for forward and BK for backward.

[022]

ADB: What do you like best about it?

G. & N.: Making up your own pictures.

G. & N.: Making up your own pictures.

ADB: What's nice about that?

N: You can invent all sorts.

G: Yeah... You can draw them on a piece of paper and try and work out the turnings.

ADB: What about if they asked you what's something you don't like about it? [Pause]

G: I don't know?

ADB: Nothing? It's that good is it? Nothing that you might get frustrated or cross about?

G & N: When we get arguments about what we're going to do.

ADB: How do you solve these arguments then?

G: He does one procedure and I do the other!

[033 - 122]

Discussing a series of designs - talking about how they would work on them: "windmill", "ABC", "block of flats" [065 - subprocedures], "flags", "squares", "olympic" [095 - subprocedures and variables], "hexagon".

[122 - 140]

ADB: Which would you choose?

G: Olympic

N: Windmill

They decide on "olympic"

[140]

ADB: How would you go about drawing olympic?

They say, write a procedure for BREC (for the big rectangle), write a procedure for SREC (for the small rectangle), write a procedure for MAN. (They write these names of the subprocedures on paper).

[170]

Talking about building them into one procedure.

Marking where the turtle will start each procedure.

[205]

Writing a procedure for BREC.

They want a rectangle, but their first procedure will draw a square. They "de-bug" this. But this time the second RT 90 is missed off, and they repeat it 4 times. They see it only needs two repeats.

[230]

N. "plays turtle": FD 100 RT 90 FD 200 (the commands repeated). This helps them see the error - next command FD 100 again. They add RT 90 in the REPEAT.

[250]

Writing a procedure for SREC

[267]

Writing a procedure for MAN. Long and carefully thought out - working well together.

[372]

All the procedures are state-transparent.

[385]

I talk about the usefulness of subprocedures, and state-transparency.

They have done all the hard work now.

-----

For the last 20 mins before Lunch, they return to the classroom and the computer. They type in and write down procedures. In this short time all subprocedures for "olympic" were typed in, and they worked, and the boys began putting the whole thing together.

The Subprocedures:

```
TO BREC
REPEAT 2 [FD 100  RT 90  FD 200  RT 90]
END
```

```
TO SREC
REPEAT 2 [FD 75  RT 90  FD 50  RT 90]
END
```

```
TO MAN
FD 100          BK 10          RT 90
LT 90           RT 90          FD 50
FD 12.5         FD 25          PU
RT 90           LT 90          BK 140
SQ              FD 50          RT 90
RT 90           BK 50          FD 25
FD 12.5         LT 90          RT 90
LT 90           FD 50          END
```

MAN doesn't work on first try because they had forgotten to define a procedure for SQ.

```
TO SQ
REPEAT 4 [FD 25  RT 90]
END
```

CODE: Lf151

They begin putting the whole design together - not in direct-drive - defining the procedure straight away, in edit mode, after the first bug, ending at certain points to see how the drawing is coming along.

```
TO OLYMPIC
BREC          FD 100          SREC
LT 90          LT 90          FD 75
FD 200         BREC           RT 90
RT 90          FD 100         FD 25
BREC           RT 90          LT 90
FD 100         FD 75          MAN
RT 90          LT 90          END
```

OLYMPIC is saved and will be continued next week.  
G. & N. worked very well and were pleased with the results.



CODE: Lf152

Lisa and Everlyn: Taped "interview" and working on design.  
1.10 - 2.50.

Repeat of session with G. & N.

Talking with E. & L. about what they think of Logo - after settling them down - they choose where to sit, talked about new girl in the class and about one who had left.

General Chat About Logo:

Asked: If you were talking with someone younger in the school who was just about to start Logo, what would you say...?

[See NOTES ON TAPE: "Interview with Lisa and Everlyn"]

What have you liked most about working with Logo? What have you liked least?

What have you learnt?

Selection Of Design:

Looking over designs and talking about them: why are you rejecting/selecting each?

E. & L. choose "olympic" design too - they were aware that G. & N. had chosen this, but I don't believe this affected their choice. Again, for them, it was a toss up between this and the "windmill". (They chose it, I believe, because it looked challenging, not like anything they had done before, and interesting).

Preparation for Solving the Design:

Basically all the ground work - defining subprocedures - done away from the computer. Lots of "playing turtle" too.

-----  
NOTES ON TAPE and PART-TRANSCRIPT.

TAPE No.8:Side A & B.

"Interview" with Lisa and Everlyn.

Counts: Side A: 407 - end; Side B: 000 - 450

Lisa and Everlyn talking about Logo and preparation for "olympic". Tape goes with designs which were shown to pupils. L. & E. talk about them and how they might draw them.

[415 - 515]

Talking about Logo in general and the turtle.

[420]

ADB: Let's suppose that somebody younger in the school was moving up to Standard 3 or Standard 4 and was going to do some Logo and they didn't know anything about it at all, what would you tell them? What would you have to say about it?

L: Umm... It's good!

E: It's a triangle called the turtle.

L: There are a lot of commands for it.

E: Yeah... Umm... (....)

ADB: Say if I was new to it and I asked you what's the best thing about it, what I'd probably like the most about it?

E: The way it draws the right shape... just by pressing a button!

L: How it works. How to find out.

ADB: What about then if I asked you if there was anything I wouldn't like about it. What's the worst thing about it?

E: Working out the thing... When you've done all the drawing...

L: turnings...

E: and the turnings.

L: You get it all wrong and have to do it all again.

E: And the editing.

ADB: Editing? What's editing though, if I didn't know anything about it?

E: Umm...

L: Go back to where you... you...

E: Right, when you've wrote all your commands and you've tried it on the screen and it doesn't look right, you have to, well, you have to call it something first, then you've wrote all your commands, and it doesn't look right, so you edit what it's called, and then all the commands you've done is down so you look over the commands and check whether they're right or wrong.

L: Look for bugs.

[464]

ADB: What do you think you've learnt from it?

L: How to use the protractor.

E: How to use the computer.

(Lots of umms..)

[476]

ADB: What does it help you with? Maths? Reading?

E: It helps you with your reading and your maths really.

[484]

ADB: What about working together then? .... If you had a choice, say we had more computers, would you like to work on your own or with somebody?

E: With somebody.

L: With somebody.

E: Yeah, because if you get stuck, then they know it, and they can get quite stuck, and you know it.

ADB: Yes. So you prefer to work with somebody rather than on your own.

E: Yeah.

ADB: Would you like to work with somebody better than you, about the same, or not so good?

E: About the same.

L: Same.

E: It wouldn't be much good for you if everybody was telling you everything.

ADB: If the other person was better than you.

E: Yeah, they'd just be telling you everything and you would be learning a little bit...

L: You would learn, if they were telling you, you'd know next time.

ADB: Yes, so you could learn from them.

E: I know, but they'd be doing most of the work so you wouldn't be learning very much.

ADB: Yeah.

L: With someone that's umm, doesn't know as much as you, you could help him and he wouldn't know much after.

E: Yeah, 'cause it's difficult for him as well. I think it's best if you're both the same.

ADB: Do you two like working together?

E: Yeah... well!... (Both laugh)

ADB: Is there anybody you'd prefer to work with?

E: Not really, no.

[516 - 665 and Side B] Discussing the series of design and how they would work on them. They first look over all the designs.

[542]

No.1: Design and Draw a Simple Face.

They've done something like that.

No.2: Quite easy - they've done the bits before.

They decide most of the designs would be quite easy.

[568]

"Olympic" Design: Looking at in parts and deciding it would be quite easy - including a variable rectangle.

About one of the designs, they say that it would be easiest to do a variable square.

They show a clear understanding of breaking down a design.

[606]

In talking about a design, E. says "just do one of those". I ask what she means by "just do one". She explains:

E: You write a procedure for one, give it a name, then save it, and then you'd have one you could use after.

When talking about "L O G O" and "A B C" it seems that they really only see the value of subprocedures for duplicating shapes, in this case the "O". When asked if they'd write a procedure for each letter ( A B C ), they seem puzzled and can't make a response. (Tape runs out).

[Side B]

Variable rectangles.

E: Variable rects... you just do variable rects... Make them smaller and larger...

ADB: There are two of these.

E: You need... like, say it ended there... move around 100 and then do another one... Ah, no! Ur... Write a procedure for that. Call it something and save it... then ur... say it finished there... Pen Up, 100, Pen down... then another one

of whatever it's called"  
(E. getting the hang of subprocedures).

[013]  
Talking about "block of flats" - "just use squares".

[021]  
ADB: Which one are you going to choose?  
They decide on "windmill" or "olympic", discarding others that  
are too easy.

[035]  
ADB: Why those two?  
E: I like the shape of that one (windmill).  
L: I like the shape of that one (olympic).  
They think these two are more interesting to look at.  
E: You know you are going for something better instead of just  
easy.

[039]  
They choose "olympic" by L. saying "which hand?".

[048]  
Talking about "olympic".

[071]  
ADB: How are you going to draw it?  
E: Make a variable rectangle because there are... six rectangles.  
Then draw the man by doing do-do-do-do-do..

They talk more about the design.

[100]  
ADB: What are you going to call the variable rectangle?

They mark on the drawing all the rectangles.  
They think about where the turtle will begin each.

[120]  
Writing A Variable Rectangle Procedure.  
First attempt: TO RECT :SIZE  
                  REPEAT 2 [FD 200    FD 100    RT 90]  
                  END

Some discussion follows.

[147]  
E: Ah, it's FD :SIZE    RT 90 and you just write 200 100 when you  
want! But shouldn't there be two :SIZES as there are two  
sides?  
ADB: Yes (and some explanation).  
E: What shall we call it? :NUM?

[157]

Second attempt: REPEAT 2 [FD :SIZE :NUM RT 90]  
They write it down and I get them to "play turtle". They decide that, from looking at a drawing for one particular rectangle, :SIZE should be 100 and :NUM 200. I translate this into the procedure which gives them: REPEAT 2 [FD 100 FD 200 RT 90]  
L. "plays turtle". She goes FD 100. The next command is FD 200.

[189]

E: But there's no RT 90 (i.e. she spots one of the errors).  
E. states [FD :SIZE RT 90 FD :NUM RT 90]  
They've got it. They write it down.  
TO RECT :SIZE :NUM  
REPEAT 2 [FD :SIZE RT 90 FD :NUM RT 90]  
END

[214]

Procedure For Man:  
They work it out carefully and write it down.  
Discussing where each rectangle will start - always in the same corner because of the general purpose procedure.  
Some confusion about where the turtle ends up after doing rectangle, so they "play turtle" again.

[337]

E. "playing turtle" - they find out that it ends in the same position as it starts. They need to do it twice as they didn't expect this.

They carefully note, on each of the rectangles, where the turtle starts and finishes (bottom right hand corner, as RT 90 is changed to LT 90).

[435]

ADB: Where does the MAN start and finish?

They call their procedure LESH

ADB: Where does LESH start and finish on each of the men?  
They draw it on each.

[448]

L. & E. return to the classroom and the computer.

-----  
For the next 45 mins L. & E. work at the computer. They type in all the subprocedures and put the design together.

CODE: Lf153

The Subprocedures.

```
TO REX :SIZE :NUM
REPEAT 2 [FD :SIZE LT 90 FD :NUM LT 90]
END
```

```
TO LESH
FD 75
LT 90          PU
PU             FD 25
BK 25          PD
LT 90          LT 90
PD             FD 35
FD 25          RT 90
LT 90          FD 15
FD 50          LT 90
LT 90          REX 15 30
FD 25          END
LT 90
```

(LESH draws the "body", "arms" and "head" of the man).

After defining the subprocedures, the whole design is put together, first in direct-drive, with a record kept of the commands, then typed in as a procedure:

```
TO OLYMPIC
PU             REX 100 200          REX 100 50
BK 200         FD 100              FD 100
PD             LT 90               LT 90
REX 100 200    FD 100              FD 25
RT 90          RT 90              RT 90
PU             REX 100 200        LESH
FD 200         RT 90              PU
LT 90          FD 75              BK 210 *
PD             LT 90              LT 90
```

CODE: Lf154

```
FD 65 *        FD 25              FD 25
RT 90          RT 90              RT 90
FD 100         LESH              PD
PD            PU                 REX 100 50
LT 90          BK 210 *          FD 100
FD 75          LT 90             LT 90
RT 90          FD 115 *          FD 25
REX 100 500    LT 90             RT 90
FD 100         FD 100            LESH
LT 90          RT 90             END
```

(\* indicates commands which I helped with).

L. & E. quite happily worked on this all through the after Break.  
It works after correcting two known typing errors.  
The girls worked persistently and hard. They were well  
motivated. This is one of the best occasions I have seen them  
work.  
I asked them why they handled this difficult design problem so  
well (and without frustration). Both put it down to working it  
all out first:  
L: It helps a lot to work it all out first.

Comments:

A useful session. It seems better work (or rather work  
accomplished less frustratedly) occurs when a lot of thinking  
about the design problem takes place before the group works at  
the micro.

I came away with the clear impression that little work has been  
done on the micros whilst I was away - nothing doing without me  
(in Logo). Serious implications...

CODE: Lf155

Notes for next visit.

CODE: Lf156

DATE: Tuesday 10th June 1986.

The Head helped set up the re-borrowed micro from the University.  
On loan til the end of term. Set up in J4.

I spent much of the morning (til 11.15) looking through pupils'  
disks.

Lisa and Everlyn's Disk:

BCIRCL	TUNNEL	FLAG
GUN	HOUSE	KR
POT	BOX	X
SEMI	SEMI2	SCIRCL

CODE: Lf157

?	LJD	HEX
AB	FORT	QC
JJ	LE	OLYMPIC
SHEL	UGLY	

By chance, a pleasing shape appeared on the screen when I typed  
SEMI and SEMI2. I decided to use this shape, rotate it four  
times:

```
TO QUEST
REPEAT 4 [SEMI SEMI2 RT 90]
END
```



I saved this on L. & E.'s disk. I shall ask them to work out what QUEST draws from only looking at the procedures.

CODE: Lf158

George and Norman's Disk 1:

CASTLE	SEMI	FLAG
ERTL	SUN	MAZE
EYES	TUG	RIHA
FACE	ERSQUR	STAR
HOUSE	EY	TRI
PENT	FA	UFO

I looked through other groups' disks.

CODE: Lf159

First Group: George and Norman: 11.15 - 12.15:  
Finishing off OLYMPIC.

G. has a very good memory - he remembers exactly where OLYMPIC was left off last time.

OLYMPIC is edited and PU BK 200 PD added at the beginning - puts the whole picture lower down on the screen.

The following commands are added to the end of the procedure:

RT 90 FD 25 RT 90 FD 75 LT 90 (lots of discussion) FD 75  
RT 90 FD 100 LT 90 FD 25 LT 90 PD (inserted later)  
SREC FD 75 RT 90 FD 25 LT 90 MAN (this line of commands was used earlier) and then END to see what it looks like.

CODE: Lf160

On their first try, a PD is missing. This is corrected.  
They then discuss the shape of the MAN - they want to change from square to triangular legs.

They edit MAN - talk some more - anticipate problems, so decide to leave the MAN's legs unaltered, although they would like to change them. I suggest that they finish the rest of the design first and think about the legs later.

The following commands are added:

PU LT 90 FD 150 (when they try the procedure later, the third MAN is not far enough across so this is edited to FD 250 then FD 275, which makes it right) LT 90 FD 75 RT 90 FD 50 RT 90 PD SREC FD 75 RT 90 FD 25 LT 90 MAN END.

I then ask if they can tidy up their procedure. They do, writing a subprocedure for commands that are repeated:

```

TO FIT
PD
SREC          G. edits OLYMPIC, deletes those commands
FD 75         and in their place puts FIT. They
RT 90         know exactly what they are doing.
FD 25
LT 90
MAN
END

```

CODE: L161

Having done this, they are still persistent about wanting to change the MAN's legs. Time is running out at this point, so I help them.

We look at the MAN and find out where the turtle begins and ends - the procedure is state transparent. The same is done for SREC - this procedure is also state transparent.

We work out where the new legs need to start and end.

G: If you REPEAT 4, not 3, it will go over that side and be in the right position (for starting MAN).

Rather than writing a fresh procedure, they decide to edit SREC and change it to:

```

TO SREC
REPEAT 4 [FD 50 RT 120]
END

```

But this isn't right as a straight line is drawn first (FD 50) when the first leg wants to be angled.

After discussion, they change it to:

```

TO SREC
LT 90
REPEAT 5 [FD 75 RT 120]
END

```

This is right except a turning - LT 150 - is needed at the end. I help them work this out.

CODE: Lf162

OLYMPIC is tried.

Problems: First they edit FIT and take out all the commands between SREC and MAN - these had driven the turtle around the rectangular legs, ready to start the MAN - not needed now as REPEAT 5 does this.

Time runs out: They stay 15 mins into the Lunch Break and we work out some of the difficulties. More problems when revised SREC is put into the superprocedure. In the end, they go to lunch and I work on the problem - main difficulty working out the distance to the mid point of the legs to get the MAN standing on the stand. Before G. & N. leave, to make the problem clearer, they write a

separate procedure called STAND which draws the first bit. In the end I save the revised OLYMPIC as OPIC as it is so changed.

At the beginning of the afternoon lesson, G. & N. look at the completed design. I tell them that they need to draw a sketch of the design and write down all the procedures.

CODE: Lf163

The Procedures:

TO OPIC

STAND

FD 100

RT 90

FD 137.5

LT 90

FIT

BK 165

RT 90

FD 180

LT 90

FIT

PU

BK 65

LT 90

FD 250

RT 90

FIT

END

TO STAND

PU

BK 200

PD

BREC

LT 90

FD 200

RT 90

BREC

FD 100

RT 90

FD 100

LT 90

BREC

END

TO BREC

REPEAT 2 [FD 100 RT 90  
FD 200 RT 90]

END

TO FIT

PD

SREC

MAN

END

TO SREC

LT 90

REPEAT 5 [FD 75 RT 120]

LT 150

END

TO MAN

FD 100

LT 90

FD 12.5

RT 90

SQ

RT 90

FD 12.5

LT 90

BK 10

RT 90

FD 25

LT 90

FD 50

BK 50

LT 90

FD 50

RT 90

FD 50

PU

BK 140

RT 90

FD 25

LT 90

END

TO SQ

REPEAT 4 [FD 25 RT 90]

END

CODE: Lf164

Second Group: Lisa and Everlyn: 1.15 - 2.30

Investigating QUEST.

I told them I had put this procedure on disk for them and that they should try and work out what it draws from looking at the procedure.

They edit QUEST and look at SEMI and SEMI2 on the screen. They CS between each so they don't see on the screen the repeated shape.

They look at the commands for QUEST again, and I ask them if they can draw what it does. They have a lot of attempts and frequently exclaim: "Oh, I know...". And often they ask "Is that right...". They try hard and think hard.

In the end I have to lead them through it - drawing SEMI and noting where the turtle ends and then drawing SEMI2. The main problem was that they thought of the turtle being in the middle of the screen facing up at the end of SEMI, when it is not.

CODE: Lf165

They almost get the drawing right, with my guidance, so I let them type QUEST. They are very pleased with the result.

I ask them to edit QUEST and put in a variable so that there can be any number of SEMI/SEMI2 shapes. L. seems somewhat confused about how many variables are needed and where they should go. I don't tell them the answer, but I tell them to think again about what I said.

They edit it correctly to:

```
TO QUEST :SIZE
REPEAT :SIZE [SEMI SEMI2 RT 90]
END
```

I ask for three of the shapes. This they do and they point out that they are not evenly spaced.

I remind them of the link between the number of repeats and the turning - 4 and 90; 3 and 120 etc...

Another variable is needed.

With some guidance, they edit it to:

```
TO QUEST :SIZE :NUM
REPEAT :SIZE [SEMI SEMI2 RT :NUM]
END
```

They then try QUEST 8 45 and QUEST 16 22.5.

They are very pleased with the results.

CODE: Lf166

There is still some time left so I ask them if they want to add anything to OLYMPIC. They use an old procedure - BCIRCL - and draw a big circle around the whole design and save this.

Not an amazing session - E. was suffering with a bad tummy ache and was not able to contribute a great deal.

Before leaving, I asked Mrs.J4 if she had any standardized test scores - for reading or maths (so I could get an idea of the case study pupils' general ability). She hadn't any. But the Head had plenty of tests and I could choose one and give it to the class. But today, the file of tests was not in school. I could collect one another time.

CODE: Lf167

Notes for next visit.

CODE: Lf168

DATE: Tuesday 8th July 1986.

Short visit to collect file of tests, to look over, select one and copy. Had a look through them with the Head and basically chose one. I don't intend to hold much store by it, rather use it as an indication of case studies' relevant ability.

I noticed not much was being done with the computers in my absence.

DATE: Wednesday 9th July 1986.

Carried out the test (Graded Arithmetic-Mathematics Test: Junior. Metric Edition: Prepared by P. E. VERNON with the assistance of K. M. MILLER. Hodder and Stoughton, London, first published 1949, third impression, 1977) on J4: 9.40 to 10.10 am. Left and marked them:

Results:

SCORE (out of 70)	AGE	NAME
57	12.3+	M.D. (b)
54	12.3+	S.L. (g "new" pupil)
53	12.3+	George
51	12.3+	A.R. (b)
50	12.3+	Everlyn
48	12.3+	A.B. (b)
47	12.3+	C.R. (g)
46	12.3+	Lisa
46	12.3+	R.N. (b)
44	12.3+	A.H. (b)
44	12.3+	D.W. (b)
44	12.3+	J.Z. (b)
44	12.3+	Norman
43	12.3+	C.M. (g)

41	12.3+	M.P. (b)
39	12	E.P. (g)
38	11.10	M.J. (b)
38	11.10	S.J. (g)
37	11.9	D.J. (b)
36	11.7	H.W. (g "bad" infl)
34	11.4	S.B. (b)
27	10.3	A.M. (b)
26	10.1	L.K. (b)
25	9.11	L.B. (g)
20	9	D.M. (b)

-----  
b = Boy; g = Girl.

(Age is given in years and months - read off accompanying table).

All the case studies came in the top half of the class and were shown to have ability in excess of 12 years, 3 months.

I thought Norman's mark might have been a little closer to the others. I was surprised that E. did so well, and better than L.

CODE: Lf168b

DATE: Tuesday 15th July 1986.

Last day of term. Intended to clear away the computer corner, but it had already been done.

I asked the Head about his plans:

-wider use of computers - with remedial and top Infants. He's on the look out for some good word programs as they can't read very well. He would like a printer for word processing.

-he intends to keep on with Logo - himself doing the teaching (when his staff problems are sorted out: illness, pregnancy and Mr.J3/4 Deputy Headship).

CODE: Lf169

DATE: 4 September 1986.

Telephone conversation with the Head:

Future plans:

Explore word processing avenue - as a change from Logo, and something more than just the little programs.

He's thinking about buying a printer - from school funds. This would help his administration work and the children - especially the less-able.

He has had problems with "Edword": has the disk and documentation but can't get it to run on the computer: when he tries to create his own files, gets "disk full" message.

CODE: Lf170

DATE: 18th September 1986.

Intention: Interview with Head: 1.30 - 3.30

What Happened:

The Head had had a busy day - 2 Heads in the morning asking him how his school was run, then two PGCE observation people. And then me.

We discussed various things until 2.15:

(1) The "Edword" problem - I brought another disk to try - no luck - does the mirco have sideways RAM?

(2) Looked at other disks the school had - mostly introductory stuff: the Head was sorting through what would run and what wouldn't. We checked through some of these.

(3) Re-formatted some of last years pupils' Logo disks. Head doing some teaching in between.

CODE: Lf171

(4) Lent Head some newsletters - "Star Logo", "Slice", "MEU Primary News" and also "Flowers Of Crystal".

(5) Discussed the "interview" - he said that there wasn't really time today and he'd be happier coming to see me on Monday. This was arranged.

(6) I asked him about documents and he lent me the school curriculum policy document - large, mostly hand written file of curriulum aims etc.

CODE: Lf172

Other Comments:

Again, the Head expressed interest in pursuing word processing. Also, he seemed attracted to some instructional programs by their colour and graphics.

He also commented on teachers' attitudes to micros: they wanted to use the computer for things they couldn't other wise do - but at the same time were apprehensive and cautions - particularly the older ones. Mr.J2/3 had used it but he's left now. Now the Head generally takes pupils out of their class and runs through programs with them - he did that with a group of Infants today. Other teachers really don't use it.

Software selection: The Head had sent a disk to the MEU centre at Mysinclla: all that came back were "little Welsh drill-and-practice programs" which was not what he really wanted (most of

the pupils are not first language Welsh).

CODE: Lf173

The school had changed somewhat: J2/3 class was now empty: used as a music/computer/office room: one BBC, disk-drive and monitor (the school's - nothing on loan now) was set up in there - all plugged in - use indicated.

CODE: Lf174

DATE: 30th September 1986

(First recorded interview with Head - problems with tape - inaudible - just loud, unexplicable, buzzing noise - undiscovered til after interview - very annoying - had to be re-recorded today (30th Sept)).

1.20 - 3.30: Recorded interview at Head at the school.  
(Responses seemed pretty much the same as the first time).

See tape transcript.



TRANSCRIPT [Li1 -Li18]

Interview with Headteacher: Longsight School.

Tuesday 30th September 1986.

CODE: Li1

ADB: We're at the beginning of another school year - a time for planning ahead and reflecting on the past; if we can first think about when the school first got a computer. How did it first get one, and how long ago was this?

HT: Well, the first contact I made with the computer was back in 1981, when ur, the visual aids officer visited the school and persuaded me that the ZX81 was a good buy and would be of great benefit to the school. Umm, I instinctively bought one and ur, hardly ever used it - umm, for various reasons - first being that we had a great deal of trouble loading programs - this was of tremendous concern to me - that a lot of the time was wasted trying to load programs; the keyboard wasn't very satisfactory. Umm but it did sort of break the ice as far as I'm concerned - it was the first contact I had with a computer of any sort, and following that, when the offer came under the MEP scheme for buying a BBC, I jumped on the bandwagon immediately, and got the BBC for school, and that was in 1983, '84.

ADB: Yes, what came with that, then?

HT: Well, a pack of materials came with it. Umm, some case studies for teachers to have a look at - how the computer was used in different schools. Umm, and there were some sample programs. Umm, these all came on tape and again, as you're only too well aware, ur, programs on tape aren't very satisfactory, especially when children are attempting to

CODE: Li2

load.... and ur, perhaps the first run doesn't work, and one has to go through it all again - some programs can be as long as five minutes to load. And ur, this wasn't very satisfactory. But umm, of course it was a tremendous improvement on the ZX81, umm, because it was colour, and ur, the keyboard was so much easier for the children to use. Ur, since then, we've ur, acquired a disk-drive, and of course these programs have now been transferred on to disk and of course now it's a different ball game altogether - that we've got instant access to programs and ur, it makes the computer I think far more versatile in the school.

ADB: Yes. What about the rest of the staff - what were their

initial reactions to having a computer in the school?

HT: Well, ur, I think they thought it was just a luxury and something that, umm, wasn't for them - especially with the ZX81 - in fact I was the same with the ZX81 - after an initial trial period, I'm afraid that ur it was left umm, in a cupboard to collect dust - it's still there collecting even more dust. Umm, of course the microcomputer industry have moved on so quickly that I think things become obsolete very very quickly - the ZX81, is certainly obsolete and it was money down the drain, as far as I'm concerned. Umm, the staff didn't show a great deal of interest in the BBC when first it came - it was a little bit of a marvel - something mysterious to them in school - something that someone else used and not them. Umm, they came in and watched me doing various things with a group of children with it... umm, but this sort of... they had a fear of the unknown - I was fortunate, fortunate in that I did attend some initial courses for

CODE: Li3

teachers on the computer - and this of course helped me over the first hurdle of using the computer one's.... when we get older, one's afraid of breaking something - children haven't got the same inhibitions - they just go on to the keyboard without any fear that something will go wrong - but of course, although we were told on the course that we couldn't damage the computer - it wouldn't blow up - we were all very cautious about which buttons we pressed - of course now that fear has gone and ur.... but persuading the other staff to use it umm, in various ways, isn't perhaps the easiest thing to do. Umm, having said that, of course I have had two members of the staff of the older children, who have used the computer with children and done it quite successfully, but whether they have full confidence in what they're doing, I ur.... I'm not too sure.

ADB: Yes. Thinking about those earlier courses then, did you gain anything else from them or was it mainly for getting used to the equipment and loading things and setting things up?

HT: Yes - setting it up - the initial thing was just setting, setting the computer up umm, and loading programs. And the course was in it's infancy when I went - was loading from cassette, and of course, as I said earlier, this isn't very satisfactory and even on the course there were troubles where programs wouldn't load for various reasons, and of course, it's so critical that the pitch and the sound levels are set exactly - that ur - the main course was just setting them up - we did take part in some programs and umm, they were ready... ready produced programs and one I think was called "Pirates" and we had to find some treasure, but umm

CODE: Li4

it's.... it was basically just sort of familiarization with the machinery rather than anything else that we could do in school.

ADB: But then I understand that you got on to using Logo. How did you first get into that?

HT: Well.... yes this was the second course perhaps, I first came into contact, the second course which I went on for computers and this was run, at the University by Dr. Colin Terry and ur, he at the time was convinced that BASIC wasn't an ideal medium for programming at.... especially primary level and that this Logo, which was something completely new to us - we didn't understand BASIC let alone some other language - Logo - that this was the answer at primary level, and ur it was a very brief course - it was just a half day course where umm a number of teachers gathered together at the computer lab at Bangor University, and we played about, and we were quite amazed at some of the graphics and some of the things we did during the afternoon. Umm, as a follow up to that we urr, Dr. Terry then asked whether I'd like to take part in a urr, a project which you yourself were undertaking at the University... umm, over a period of two years, and ur, this I was only too ready to accept because any expertise urr, extra expertise in the school I think is an asset and so umm, we decided that we would do this with the third years so that they'd have the last two years of primary school, under close supervision, by yourself and Dr. Terry and of course myself and the class teachers, and this we did and we ran for two years, and I think without causing you too much embarrassment, without... with a certain amount of success. Initially

CODE: Li5

it was going into the unknown - I didn't know where the children were heading, but umm, on reflection I think it - it was of great benefit to that group of children who followed this course for two years.

ADB: What do you think these children learnt?

HT: (pause) Initially I think they... they... it taught them to think logically and I think this.... if you've done nothing else, I think you've succeeded in that; they had to think logically and clearly - they had to be quite clear in in their instructions umm, otherwise the task undertaken, of course, wouldn't work, so I think this, if nothing else, was of prime importance. Secondly, they were put into a situation where they.... they were given assignments and given problems, and they had to solve these: they were in a problem solving situation, and again, they.... they were able to, to solve these problems using the computer, umm, and they were able to do it step by step, and I

think this logical thought - working forward in a progressive manner, I think was excellent. Umm (pause) the.... initial stages we saw very little difference within the class but as time went on, the more able child did certainly move on a lot quicker. But having said that, it also gave the less able child.... I.... I feel, a great deal of confidence - it's like seeing a child learning to swim for the first time - how they gain confidence.... and I think children under-going this project that we did, gained suddenly a lot of self-confidence and certainly did some umm, some mathematics that we wouldn't, under normal circumstances, have attempted with children of that age.... for example introducing the term "variables".... I mean it's

CODE: Li6

something that possibly children of the third and fourth year of secondary school.... but they took to it quite easily and quite readily and accepted it for what it was and understood it, and I think with the visual umm, aspect of Logo and seeing the results on the screen that this helped them in their learning process.

ADB: Yes.... did you get any come-back from the children yourself in talking to them.... did they enjoy....

HT: Oh they enjoyed it because umm, each one I think .... each one had.... well they worked in groups.... but I think they must have had half-an-hour, three-quarters of an hour of close supervision on the keyboard umm, weekly.... in addition to this they were able to go back in their own time on the keyboard. I think one measure of the success is.... is the keenness and eagerness of the children to go on the keyboard and.... and to try and solve some of the problems set them. Umm, some urr urr, amount of competition arose between the children and there was a little bit of gamesmanship in.... in umm, naming various processes they were doing and they were very secretive about it and they were very proud I think in what they achieved because when some of their work was printed umm, they were umm, ever so proud in coming round, not showing myself but other members of the staff, what they had created and umm, this, I think they could never have done in BASIC because the process is far too difficult to umm, to do in BASIC and secondly, they underwent processes which... and understood processes in mathematics, which I think would have taken us years, many years to teach them, under normal circumstances. So I think

CODE: Li7

umm, the children gained a lot from it: they enjoyed it, which I think is of primary importance, and... but they also learnt.... and ur, and learnt quicker than under normal circumstances.

ADB: So would you unreservedly recommend Logo to other primary

school teachers?

HT: Well, from my own experience, yes. Ummm.... we were fortunate, as I said earlier, in that we did have urrrmm an "expert" (in inverted commas) here - I know you were learning it just - virtually at the same time as the children - or perhaps one step ahead of the children, but urrm, it's nice having one person responsible for this - I would have certain reservations if somebody was doing it initially with a whole class and doing other subjects, then urrm, one would have to go at a more slower pace than we were able to go initially. Umm.... we have done it umm, with a group of children as a pilot scheme after the... the... the initial project, and I've found that we did move at a much slower pace with them, of necessity because um, teacher's time couldn't be devoted - you were able to spend two whole days with groups of children....

ADB: Yes, just doing Logo.

HT: Just doing Logo.... and at some times of course getting a whole class together on a certain assignment and discussing various things - now then, it's able to get the whole class together, but what's important is the actual time on the keyboard. And this is umm, programmed very, very carefully, but yes, I.... I still think that it's something that's umm, I will continue in school, that children will be doing, if it's just to

CODE: Li8

teach them to think logically and nothing else - I think that it's useful for that.

ADB: So Logo is really quite different in some respects from other computer uses - how do you think it compares.... because as you said I was one.... I was learning one step ahead of the children - it's not like a reinforcement program or something like that....

HT: No.... when in fact, I think it's urmm quite different from a reinforcement program in that the children are actually programming - they are creating and I think this is important about Logo. With other programs - the reinforcement type programs - these - you have very little choice urr.... the program is there for you and you use the program and urmm children.... [tape stopped - bell ringing loudly] ....Sorry about the bell.... umm yes, the programs.... the pre-produced packages which we have in school urmm, there's very little freedom for children - they just use the program - it's used just as urmm, reinforcement of basics urm.... a certain amount of problem solving umm, but the Logo was in a position where the children had to think and had to program for themselves so I think the two are quite separate.... [tape stopped - pause]

ADB: How would you select software - what would you look for and avoid - sort of looking through some programs which you hadn't seen before perhaps....

HT: Urmm, very difficult.... umm.... the drill-and-practice type ones urr.... quite successful - urmm certainly it's.... I'm impressed to see the children work on them because they seem to respond instantaneously

CODE: Li9

to.... to.... to this type of program and they do.... do work.... it does reinforce.... it does teach the children.... Umm... I would look at the computer as being a little bit more than just that. I would like to develop it in more ways than just drill-and-practice.... umm Logo is one route we could take, and the other I want to develop is the Logo (does he mean computer?) as a word processor - I think this has tremendous possibilities even at primary level.... umm, perhaps more so with the less-able child again, in that they can do a typed piece of work, see it on the screen, we can correct it and discuss it and they will see that piece of work umm, in its final draft and as neat as any work produced by any child, and urr, I think there are a lot of possibilities even for.... even for urr.... for children of all abilities and I'd like to develop this.... but of course it was the added expense of having to get umm, a printer for school which.... umm, would involve a little bit of fund raising.... But I think urr.... this is another avenue we could take with the computer.... urrr.... another umm.... possibility I think is one of building up and storing files....

ADB: Information?

HT: Information.... yes. And that children then can draw on this and urr.... only recently looking at one called "Fact File" where the children compile this file themselves and then they can get access to different - urmm different parts of the file.

ADB: Did you try the "Domesday Project" - you were involved with that?

HT: The "Domesday Project" - yes.... That had its limitations in that

CODE: Li10

urmm, it was a little bit of a straight jacket.... We.... it was basically just like a simple word processor where we typed in information about the area.... umm.... It was an interesting project to take part in and of course it will be interesting to see the finished product at the very end - But umm what I'm

interested in school is that the children.... urr....  
compiling.... umm.... files of their own urr.... using it as a  
word processor on their own, using produced programs, some of  
them going with umm, adopted schemes of the school.... umm....  
for example the reading scheme does have a number of software  
materials available now which run with the school reading  
scheme.... and the same applies to the Maths scheme.

ADB: And did you.... you followed a series on television?

HT: And a series yes, there was a series on on television - "The  
Computer at Work" - it related the computer to everyday life and  
I think this is what, this is what is important um, without  
knowing umm possibly, umm we're handling micro-processors all day  
long - in the home umm, on our wrists, as calculators in the  
classroom and urr, it.... this is the sort of world we're living  
in now and I think children umm.... the sooner they come to terms  
with it - what it's all about, I think the better.

ADB: Yes.... Have you thought about the "Adventure Game" type  
program.... simulations, adventures, like the "Flowers of  
Crystal" or other such games....?

HT: Urmm.... yes.... "The Flowers of Crystal".... I.... no  
umm.... I haven't really tried it with children as yet but it's  
full of

CODE: L111

possibilities and I think as a lead in lesson for a project.... I  
think it's got tremendous possibilities... The story itself is  
quite modern and ur the children are put into thinking and  
problem solving situations and arising from this you've got all  
sorts of spin-off activities that can be carried out in school -  
art and craft, maths - co-ordinates - things of this nature -  
there's a tremendous amount of work one could use just starting  
from this basic program.... Umm.... some of the arcade-type games  
I.... I have some doubts about in... in the school, having said  
that it's umm.... sorry (MW pauses - stops the tape).... Yes some  
of the arcade-type games I.... I've got doubts. A lot of the  
children have this sort of game at home. It's amazing how many  
children do now have urr.... a microcomputer at home, in the main  
used for arcade-type games and no other sense at all.

ADB: Yes.... do you ever.... Do you come across children using  
them for educational programs?

HT: Urr.... some have asked whether they could borrow some of  
the materials we've got in school - those who've got BBCs and  
have taken them home. Umm.... those who buy computers from the  
local outlets - High Street out-lets.... they umm.... tend to get  
the games - space invaders and things of this nature - and they

have joy sticks with them.... Umm.... I think it's our role to show that other things are possible.... and that the computer - even in the home - can be used.... even if it's just using as a file to store away umm such mundane things a recipes.... urr.... things of that nature.... that again, the computer has a place in the home

CODE: L112

- whether Mum would like it, a computer in the kitchen with instant recall on recipes, I don't know.... space and work surface in the kitchen - you fight for that. But umm - I think we... one should try and show children that that this is possible in the home - that we can store things in file form so that we have instant access to them.

ADB: Now, a rather difficult question - how can you, or how would you assess whether the computer has been used successfully in your school - or a particular program?

HT: Yes,.... it is quite difficult.... Umm, I would, I don't think I'd use the computer completely on its own.... in splendid isolation - it would be there as a back-up to the more perhaps "traditional" (in inverted commas) types of teaching methods - if you're looking at the sort of practice type programs.... Umm when you're looking at things like Logo and other other programs which are on the market, where the children are put in a problem solving situation.... I .... I would think that one would have to look very carefully at how children have come about.... have reached certain decisions.... and I think that this is done by discussion afterwards.... and ur.... it's only by.... through discussion that one sees how children have reached certain decisions... and ur.... this.... is done by chatting, by chatting to the children and discussing exactly what what what they've done and then....

ADB: ....rather than....

HT: rather than....

ADB: ....possibly a test score result at the end of a...

CODE: L113

HT: well yes it is always useful, always useful to have a test score result at the end. But urmm I.... I.... would.... I'm old-fashioned enough to still would like to have a discussion with the child, and ur to see how they have reached certain decisions and then follow this up with further discussion.... umm.... of course the limitations of course of the whole thing, is that in a school of our size - 170 pupils - is one computer and of course when.... when.... when you look at one computer



between so many children the amount of time a child can have on the keyboard - actually on the computer is very (knock at the door) very small. [tape stopped for door]

ADB: If we look at the future now, what plans do you have for computer use....

HT: Are you thinking of the ideals... what I'd like and what I'll get.... what I'd like.... what I'd like is, because there's so much spare capacity in the school - I've got two empty classrooms - I'd love one to be turned into a computer lab, with perhaps.... a dozen, fifteen computers... why not more.... so that a group, a whole chronological group of children can go in and work on the computers... Umm.... I don't think one is looking at a great expense for this... because if you go to the high street now you can get microcomputers together with a printer for.... in the region of £150 and up.... with quite nice keyboards. Of course, that's the ideal situation, what I've got at the moment is one computer. I would like to see most children aware of what the computer - the minicomputer, the microcomputer can do - not.... not only in the school situation but

CODE: L114

also in the home... how the microchip is affecting our every day life... I'd like most children to be able to have access to the computer in the school.... umm whether this is possible.... err for them to actually go on the keyboard I doubt very much - so what I intend to do is look at the.... the older child for keyboard use and look at the third and fourth year juniors and they can have a certain amount of time on the keyboard actually working on Logo, or some preproduced programs. And with the younger ones tend to use it as a sort of drill-and-practice - type of machine so that children can go and be taught number bonds, taught tables perhaps and they just practice this on the computer - it's quite straight forward - quite easy for them to operate.... Umm the younger child can do this and the computer can sit in the corner of the classroom and be used - I'd like to see it utilized for most of the school day rather than sit collecting dust. What saddens me is the fact that in some schools I know for a fact in some schools computers are doing just that.... where they've been bought under the scheme.... and because there's no member of staff really interested, that it's just been left to collect dust.... and this I think, is very very sad.

ADB: Yes.... But that is a problem - I'd say - with some teachers it just really hasn't caught on, and nothing's been done about it.... Where does the fault lie or in what way might the situation be remedied, do you think.... Should these schools not bother with them at all or is it worth them making the effort to bother with them, or...

HT: I think it is worth making the effort umm, having bought.... I

CODE: L115

think when.... when ones buys anything for a school one must look very critically at it before making a decision whether to buy or not and I think to buy just simply to jump on the bandwagon is criminal - they're got to make some grave decisions first before purchasing something like this, that it is going to be utilized.... that they have got the expertise.... if only just one member of staff.... I know staff change - staff move on.... but I think it is important that there is some one in the school who is conversant with what is possible with the machine.... And ur that it is not bought, as I said earlier, just for.... because it's.... it's the done thing.... the neighbouring school's got one so we're going to get one. Umm, and I think it is important that staff attend in-service training courses and keep up with the huge developments that are being made in this field.

ADB: Do you think there are enough in-service courses, or courses available for teachers.

HT: Oh there are.... there are courses available, whether the umm.... whether the teachers respond.... whether one should force teachers to go on these courses and many of these courses are after school hours - if the courses were in school time then the teachers could be more or less forced to attend these courses - after school hours, of course it's entirely up to them, whether they attend or not. I think a lot of it is sort of fear - just as many have fear of.... things like tape recorders, projectors umm.... they think of these as sort of luxuries.... things that they don't really need umm and I think they look at the computer in the same sort of

CODE: L116

light.... but I think it's completely different, the computer from things like the tape-recorder or the projector: the computer is something we're living with and it's got.... it has a tremendous bearing on society in the last ten years or so.... I mean.... the microwave in my kitchen you know it's a mini computer and it's programmed, very carefully, before one closes the door, before the food starts cooking.... So it's.... that itself is simple programming.... very very simple, very basic, but it's important that children are aware of the uses of the computer and we shouldn't neglect this duty.

ADB: There is so much available in the way of.... in terms of software.... and ways of using the computer that.... well, have you found it a problem of just being able to see what's going on

or do you think there's a role for more help there?

HT: Yes, the evaluation of materials is very difficult, very pricey... with books one can have.... borrow books or buy books on a sale or return basis.... urr.... not quite the same with computer programs.... so I think there should be some sort of umm central body who can make some sort of recommendation, perhaps grade the programs - but of course we all have different standards - whether this would be successful I don't know. The Authority does have a back-up and they have quite a resource centre now, whereby we can borrow programs or they'll even put programs on to disks for us.... and the school library service also has programs and these.... these are organizations where.... whereby we can borrow programs from.... try them out, and if we want, if we find them of great value to the school

CODE: L117

then of course we can buy our own copy.... But this.... is one outlet and one way of evaluating, of trying and evaluating material in school, is to borrow them from these organisations.

ADB: And then you really need the time as well though.

HT: One needs the time.... Umm and this of course means perhaps, taking the computer home and looking at programs, trying it out with initially a small group of children and seeing how they get on, how they cope with it and then if it is successful, then expand, or possibly purchase it for the school....

ADB: Do you have anything to add, any other comments about micros in primary school in general....?

HT: I think we have, more or less covered.... I think the basic thing in primary school.... if anyone listens to this tape through-out - whether they will.... but if they listen to this tape through-out, they might find that it's very disjointed - we've been interrupted a lot - 5 or 6 times - by school bells, by people knocking on doors, and by being thrown out of a classroom and having to set up again in another spare classroom - but umm.... no I think the important.... the important thing is.... is what you want, first of all, is someone with enthusiasm in the school - this is the main thing. Once you've got someone with enthusiasm.... I think then this enthusiasm will rub off on to other members of staff.... umm and I think this is true in any field, in any subject - it's the enthusiast I think who comes first, not the specialist and from there we can develop. Umm, I'd like to develop Logo - I would officially like to thank you -

CODE: L118

because I think you've set us on the road - without taking part

in this project, I don't think we would have gone very far with Logo - we might have drawn a square, a pentagon, a rectangle, but I don't know how much further we'd have gone. Umm but I know that it was of great benefit to the children.... and of course to myself and to the members of staff - and I think this is the important thing - somebody working alongside the staff and the staff then can see just what the possibilities are, and I think this is perhaps one way ahead, is that we do have experts in the field who can come into the classroom and work alongside the teacher and possibly develop a program whereby the computer can be a sort of integral part of the classroom where children can go, work on it quietly, undergo some project on it and then return to normal classroom activities while other children go and go on it. There are so many fields the mind boggles which.... in which direction we'll go....umm - perhaps I'm only scratching at the surface rather than going deep enough into one particular activity.... But I.... I'm keen.... I feel very strongly that children should be aware of all the possibilities of the computer, not just one or two possibilities.... [pause]

ADB: Well.... thank you very much once again.

[Total Counts: 390]

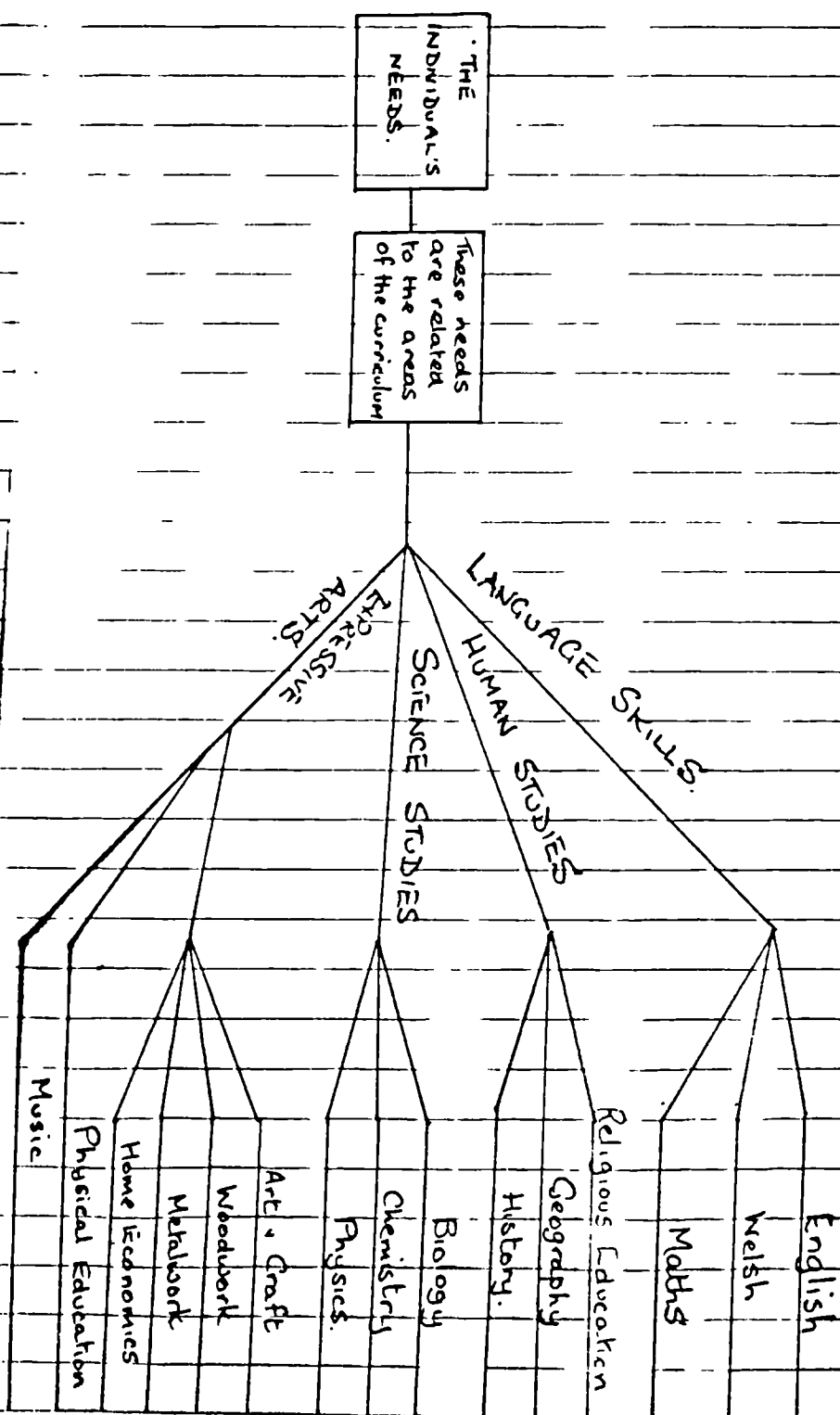
Aims of the school

1. To help children develop lively enquiring minds giving them the ability to question and to argue rationally, and to apply themselves to tasks.
2. To instil respect for moral values, for other people and for oneself, and tolerance of other races, religions, and ways of life.
3. To help children understand the world in which we live, and the interdependence of nations.
4. To help children to use language effectively and imaginatively in reading, writing and speaking.
5. To provide a basis of mathematical, scientific and technical knowledge, enabling boys and girls to learn the essential skills needed in a fast changing society.
6. To help children to appreciate how the nation earns and maintains its standard of living, and properly to esteem the essential role of industry and commerce in this process.
7. To teach children about human achievement and aspirations in the arts and sciences, in religion, and in the search for a more just social order.

Extra ts only - no pgs  
missing.

8 To encourage and foster the development of the children whose social or environmental disadvantages cripple their capacity to learn, if necessary by making additional resources available to them.

# THE SCHOOL CURRICULUM.



## The Curriculum

There are some skills for which the primary schools have a central, and indeed over-riding responsibility. Literacy and numeracy are the most important of these: no other curricular aims should deflect teachers from them. By definition they must form part of the core of learning, the protected area of the curriculum.

In all schools teachers need to be quite clear about the ways in which children make and show progress in the various aspects of their learning. They can then more easily choose the best approach for their pupils.

Teachers in successive classes or schools need to agree about what is to be learned. They should as a matter of professional habit pass on clear information about work done and levels of achievement.

Teachers should be able to identify with some precision the levels of achievement represented by a pupil's work. In parts of the curriculum such as arithmetic, it is relatively easy to organise a series of targets for the pupils according to a logical sequence of difficulty. In other parts of the curriculum where teachers are planning to develop their pupils' imagination and social awareness, it may not be possible to be so precise. Teachers can nonetheless plan a progression in these parts of the curriculum and so ensure that they make their proper contribution to the child's education.



Even allowing for local and individual needs, children throughout England and Wales have many educational requirements in common. It is therefore reasonable to expect that children moving from a primary school in one part of the country to another elsewhere will find much that is familiar in kind if not in detail.

## LANGUAGE

Before starting school most pupils have considerable experience and command of spoken language. A child starting in the reception class would probably already have a vocabulary of about 5000 words. Our aim is to build on this and to develop on all 4 modes of language -

### SPEAKING — LISTENING — READING — WRITING

These four modes constantly interrelate.

Bullock states :-

"Language competence grows incrementally, through an interaction of writing, talk, reading and experience, the body of resulting work forming an organic whole."

Aims for the teaching of English in these 4 modes should be :-

#### SPEAKING

to develop pupils' ability to speak,  
with confidence, clarity, fluency and in appropriate forms of speech,  
in a variety of situations and groupings for a variety of audiences,  
for a range of purposes of increasing complexity and demand;

and correspondingly to develop their capacities to LISTEN with attention and understanding in a similar variety of situations and for a similar range of purposes

#### READING

To enable pupils to read fluently and understanding a range of different kinds of material, using reading methods appropriate to the material and the purposes for which

## Some important mathematical principles.

1. Discuss all work orally until the child can offer an adequate, accurate account of what he is doing.
2. Understanding is vital. Remember that the work still contains number facts, tables and computation.
3. Concrete experience must precede abstract thought.
4. Practical work is only a means to an end. If a child takes to abstract mathematics readily, with understanding, do not waste his time with apparently pointless play.
5. The fullest possible use must be made of pictorial representation in conjunction with written work.
6. Children revel in a few minutes of quickfire mental work with no written answers. Find time for it every day.
7. Make provision for:-  
testing groups, discussing in groups.
8. Do not rush new work.
9. Use assignment cards. Teacher produced material is usually the best.
10. Develop a mathematics corner where the available equipment is visible and readily available.

## AIMS and OBJECTIVES

To promote an understanding of the concepts and proficiency in the basic skills of mathematics in children aged 5 - 11.

The objectives of the Teachers Handbook are:-

1. To give teachers clear guidance on the content, method and timing appropriate to each stage of the course.
2. To give practical "down to earth" suggestions for teaching number, measurement and shape, using activities suitable for children with a wide range of abilities and backgrounds.
3. To give guidance in the use of both home made and commercially available apparatus.
4. To encourage the development of a healthy, inquisitive attitude towards mathematical patterns and structures.
5. To suggest ways of dealing with children's difficulties.

### The Language of Mathematics

From the earliest stages, the language should be mathematically accurate. The words should, as far as possible, arise naturally from the environment and the experiences themselves. The teachers guides do in fact list relevant vocabulary for each chapter of work.

# Cockcroft:

## An introduction for primary schools

Lcp23

*Mathematics counts*,\* the report of the Cockcroft Committee of Inquiry into the teaching of mathematics in schools, is the most authoritative document about school mathematics to be published for many years. It contains much of importance for those who teach mathematics in primary schools. In a Parliamentary statement the Secretary of State for Education and Science said that "the report has set out an analysis of the purposes of mathematics education which is striking in its realism and lucidity. It has put forward recommendations which call for early action by all involved. . . . Our task is to build on the foundations which the Cockcroft Committee has laid." This is a task in which each primary school needs to take part.

This paper is an introduction to the report for teachers in primary schools and sets out some of

the messages from the report which are of particular relevance to those who teach mathematics in the primary years. The Cockcroft Committee has presented its arguments and conclusions in a way which makes them accessible to those who are not mathematics specialists and this paper often makes use of the words of the report itself.

This introduction is not, however, in any sense a summary of the report nor a substitute for it. It is, therefore, important that a copy of *Mathematics counts* should be available in each primary school for teachers to consult. It is important, too, that the head and at least one member of staff should have a clear view of the report as a whole so as to be able to explain and interpret the relevant sections to colleagues.

\* *Mathematics counts* Report of the Committee of Inquiry into the Teaching of Mathematics in Schools under the Chairmanship of Dr W H Cockcroft. HMSO £5 75

## Some messages from the Cockcroft report

### Why teach mathematics?

A principal reason for teaching mathematics must be its importance and usefulness in many other fields. The study of mathematics can also help to develop powers of logical thinking, accuracy and spatial awareness, though the extent to which it does so depends on the way in which mathematics is taught. The inherent interest of mathematics and the appeal which it can have for many children and adults provide yet another reason. However, the most important reason for teaching mathematics to all children is that it can be used as a powerful means of communication – to represent, to explain and to predict. All of us need at some stage to read the numbers on houses or buses and the price labels in shops, or to calculate how long a journey will take; some need to be able to estimate how much petrol will be required for the journey and perhaps also how much it will cost.

Mathematics can be used to present information in many ways, not only by means of figures and letters but also through the use of tables, charts and diagrams as well as of graphs and scale drawings. However, the extensive use of a variety of symbolic notation which enables mathematics to be used to communicate information concisely and unambiguously is also the cause of its difficulty for many people. The solution of a mathematical problem cannot begin until the problem, stated or thought of in words, has been translated into the appropriate mathematical terms. It is this first and essential step which many people, both children and adults, find so difficult and to which too little attention is often paid. Unless a problem can be expressed in the appropriate symbols, it is of little use to be able to manipulate those symbols. This is the reason why practice in computation, undertaken by itself, so often produces no improvement in the ability to make use of mathematics in everyday situations.

Mathematics is a difficult subject both to teach and to learn. Many people take a long time not only to become

familiar with mathematical skills and ideas but also to develop confidence in making use of them. Those who have been able to develop such confidence with relative ease should not underestimate the difficulties which many other experience, nor the extent of the help which can be required in order to be able to understand and to use mathematics.

### Mathematical needs of adult life

A study\* commissioned for the Cockcroft Committee showed that, although there were many people who were able without difficulty to cope with the mathematical needs of their everyday lives, there were many others of whom quite the reverse was true. Indeed, the extent to which the need to undertake even an apparently simple piece of mathematics could induce in some people feelings of anxiety, helplessness, fear and even guilt was perhaps the most striking feature of the study. Nor were such feelings experienced only by those who lacked academic qualifications. Some whose academic qualifications were high nevertheless lacked confidence in their understanding of mathematics and in their ability to make use of it; for this reason career choices had in some cases been seriously reduced. It was clear, too, that there were many people who had far from happy recollections of their mathematics lessons while at school.

### The mathematical needs of adult life include

- the ability to read numbers and to count, to tell the time, to pay for purchases and to give change, to weigh and to measure, to understand straightforward timetables and simple graphs and charts and to carry out any necessary calculations associated with these;
- the 'feeling' for number which permits sensible estimation and approximation and which enables straightforward mental calculation to be accomplished;

\* Use of mathematics by adults in daily life. ACACE, 19B de Montfort Street, Leicester LE1 7GE

- sufficient confidence to make effective use of whatever mathematical skill and understanding is possessed, whether this be little or much.

Although not all adults are able to achieve success with the whole of this list, the objectives which it sets out are within the capability of very many and the extent to which they are achieved will depend in large measure on the foundation of mathematical understanding which is laid in the primary years.

### Attitudes towards mathematics

The study into the mathematical needs of adult life found that failure and consequent dislike of mathematics was often ascribed to a specific cause when young and this conclusion is supported by other studies to which the report refers. For example, "strongly polarised attitudes can be established, even amongst primary school children, and about 11 seems to be a critical age for this establishment" (para 205). It is therefore important that children should be helped to develop positive attitudes to mathematics from their earliest days at school. During every mathematics lesson children are not only learning, or failing to learn, mathematics as a result of the work they are doing but are also developing their attitudes to mathematics. In every mathematics lesson their teacher is conveying, even if unconsciously, a message about mathematics which will influence these attitudes. Once attitudes have been formed they can be very persistent and difficult to change. Positive attitudes assist the learning of mathematics; negative attitudes not only inhibit learning but very often persist into adult life.

Very young children usually show an uninhibited enthusiasm and curiosity; school is enjoyable and they learn rapidly and with interest as they encounter a great variety of new experience. The challenge for the teacher is to present mathematics in a way which continues to be interesting and so allows understanding and confidence to develop. During their visits to primary schools, members of the Committee met a number of teachers who were succeeding in presenting mathematics in this way and whose pupils were clearly enjoying their work. However, not all the teachers whom they visited were achieving this level of success. Even in schools in which the general atmosphere was lively and supportive, the need of children to work at mathematics in practical ways had not always been realised, so that attitudes to mathematics in some classrooms contrasted strongly with attitudes to other work.

### Parents

Parents can exercise, even if unknowingly, a considerable influence on their children's attitudes towards mathematics. Encouragement to make use of mathematics during normal family activities can assist children to develop familiarity with numbers and confidence in making use of them. However, in some cases parents can expect too little or too much of their children. It can happen, too, that parents fail to understand the purpose of the work which their children are doing and so make critical remarks which can encourage the development of poor attitudes towards mathematics. It is therefore important that schools should make active efforts to enlist the help of parents by explaining the approaches to mathematics which they are using and the purpose of mathematical activities which parents themselves may not have undertaken while at school.

### Primary mathematics curriculum

The increasing use of approaches to mathematics which are based on practical experience has led to a widening of the mathematics curriculum in most primary schools during the last twenty years. This is to be welcomed; it has had a beneficial effect both in improving children's attitudes to mathematics and also in laying the foundations of better understanding. However, work of this kind needs to be carefully structured with due regard to planning and continuity, to methods of assessment and recording, and to consistency in the development of work in the school as a whole so as to ensure progression. Furthermore, much of its value will be lost unless it is followed up by discussion with

the children so as to establish the necessary concepts and make links with other pieces of work which have been undertaken. The primary years are a time when children, in addition to acquiring the skills of language and number, are experiencing a variety of methods of learning; they are learning to think, to feel and to do, to explore and to discover. The learning of mathematics should contribute to these experiences.

The primary mathematics curriculum should therefore not only equip children with the mathematical understanding and numerical skills which will be a powerful tool for later work and study but also

- enrich children's aesthetic and linguistic experience;
- provide children with the means of exploring their environment;
- develop powers of logical thought.

The practical and intuitive experience which should be the result of a curriculum of this kind provides an invaluable base for further work in the secondary years. However, the study of mathematics in the primary years should not be seen solely as a preparation for the next stage of education; time spent on mathematics should also be seen as worthwhile in itself – time during which doors are opened onto a wide range of experience. Mathematics should be presented as a subject both to use and to enjoy.

### Teaching style

It is not possible to indicate a definitive style for the teaching of mathematics; approaches to the teaching of a particular piece of mathematics need to be related to the topic itself and to the abilities and experience of both teachers and children. Furthermore, methods which may be extremely successful with one teacher and one group of children will not necessarily be suitable for use by another teacher or with another group of children. Nevertheless, there are certain elements which need to be present in successful mathematics teaching to pupils of all ages. Mathematics teaching at all levels should include opportunities for

- exposition by the teacher;
- discussion between teacher and pupils and between pupils themselves;
- appropriate practical work;
- consolidation and practice of fundamental skills and routines;
- problem solving, including the application of mathematics to everyday situations;
- investigational work.

This list is not new. The method of working which it describes has been recommended, in one form or another, over many years. However, although there are some classrooms in which the teaching includes, as a matter of course, all the elements which are listed above, there are still many in which the mathematics teaching does not include even a majority of these elements. The implications of this fact are considerable. It is essential that standards of mathematics teaching should be improved overall. The extent to which this is accomplished will depend in large degree on the extent to which those who teach mathematics are able – and can be helped – to work in the way advocated above.

### Practical work

Practical work is essential throughout the primary years if the mathematics curriculum is to be developed in the ways advocated in the previous paragraph. It should encompass work on shape and space, graphical work, logic and the activities of daily life such as shopping, travel, model making and the planning of school activities, as well as measurement and number work. Work of this kind requires a considerable amount of time but, provided the work is properly planned and followed up, this is time well spent. For most children practical work provides the most effective means by which understanding of mathematics can develop. It enables them

\*Use of mathematics by adults in daily life. ACACE, 19B de Montfort Street, Leicester LE1 7GE.

to think out the mathematical ideas which are contained within the various activities they undertake at the same time as they are carrying out these activities. It is a mistake to suppose that there is any particular age at which children no longer need to use practical materials or that, as children grow older, such materials are needed only by those whose attainment is low; even children to whom abstract thinking appears to come easily often need to undertake practical exploration at the beginning of a new topic.

### Use of language

Language plays an essential part in the formulation and expression of mathematical ideas but in many schools it is not accorded sufficient prominence during mathematics lessons. From their earliest days at school, children should be encouraged to discuss and explain the mathematics they are doing with their teacher and with their fellows so that, by means of this discussion, they can share their ideas and develop and refine their understanding. The development and extension of mathematical language should continue throughout the primary years. Teachers need to be aware of the great variety of language which is used in connection with many of the mathematical operations which children will meet so that they can assist their pupils to become familiar with the many different ways in which the same mathematical idea can be expressed. For example, the instructions 'add 5 and 3', 'add 3 to 5', 'find the sum of 5 and 3', 'find the number which is 3 more than 5' all require the same mathematical operation to be carried out. Children need to be able to interpret these apparently different instructions and to attach them all to the symbolic form  $5 + 3$ .

Reading skills in mathematics should be built up alongside other reading skills so that children can understand the explanations and instructions which occur in the mathematics books which they use. It is a mistake to try to avoid reading difficulties by preparing work cards in which the use of language is minimised or avoided altogether.

### Calculation

The focussing of attention onto standards in schools which has occurred in recent years has created pressure in some quarters for a 'back to basics' movement – pressure which has sometimes been heavy on those who teach in primary schools. This has encouraged some teachers to restrict their teaching largely to the attainment of computational skills. However, the ability to carry out a particular numerical operation and the ability to know when to make use of it are not the same; and both are needed. The mathematics of everyday life, as well as the mathematics used in employment, is always mathematics used in a practical situation. It is based largely on measurements of many kinds made for many different purposes. Arithmetical skills are therefore a tool for use in situations which require an understanding of other areas of mathematics such as the geometry of shape and space and graphical representation of various kinds. An excessive concentration on the purely mechanical skills of arithmetic for their own sake will not assist the development of understanding in these other areas. It follows that the results of a 'back to basics' approach are most unlikely to be those which its proponents wish to see, and such an approach can in no way be recommended. Nevertheless, children need help and practice to develop appropriate skills of both mental and written computation. These skills are founded on basic concepts which need to be developed through measurement, shopping, the use of structural apparatus and many other activities, and which include the meaning of the operations of addition, subtraction, multiplication and division as well as the very important concept of place value.

### Mental calculation

The decline of mental and oral work within mathematics classrooms which has taken place in recent years reflects a failure to recognise the central place which working 'done in the head' occupies throughout mathematics. Even traditional methods of recording calculations on paper are usually based on steps which are performed mentally. For example, the written calculation  $27 + 65$ , carried out by the method

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which is traditionally taught, requires the mental calculations  $7 + 5 = 12$  and  $1 + 2 + 6 = 9$ . A still more important reason for including the practice of mental calculation is the now well established fact that those who are mathematically effective in daily life seldom make use 'in their heads' of the standard written methods which are used in the classroom but either adapt them in a personal way or make use of methods which are highly idiosyncratic. It is, for example, common when carrying out calculations mentally to deal with the hundreds or tens first and the units afterwards; for instance, when adding 27 and 65, to use the sequence  $20 + 60 = 80$ ,  $5 + 7 = 12$ ,  $80 + 12 = 92$  – but this is, of course, only one of several methods which can be used to carry out this calculation mentally. Although many children come to realise by themselves that methods which may be convenient on paper are often not well suited to use 'in their heads', many others do not; and so their teachers need to point this out and to discuss at length the variety of methods which it is possible to use.

### Approaches to calculation

It is not the case, as is sometimes alleged, that teachers in many primary schools pay insufficient attention to developing computational skill in their pupils. Indeed, the report of the HMI Primary Survey states that in some classes pupils were spending too much time undertaking repetitive practice of processes which they had already mastered. However, it is essential that children should be helped to attain a secure and rapid recall of number facts up to  $10 + 10$  and  $10 \times 10$ . This knowledge, together with an understanding of place value, provides a basis for calculations involving small or large numbers. The learning of these number facts needs to be based on understanding but understanding does not necessarily result in remembering. A time comes, therefore, when most children need to make a conscious effort to commit these number facts to memory. However, there are some children who will not have acquired such secure and rapid recall by the age of 11.

Young children should not be expected to move too quickly to written recording in mathematics. Some parents, albeit with the best of intentions, can exert undesirable pressure on teachers of infants to introduce written recording of mathematics, and especially 'sums', at too early a stage because they believe that the written record is a necessary sign of a child's progress. However, there are many stages through which young children need to pass in order to carry out written calculations with understanding. A premature start on formal written arithmetic is likely to delay progress rather than hasten it.

### Calculators and computers

There are two fundamental matters which need to be considered:

- the ways in which calculators and micro-computers can be used to assist and improve the teaching of mathematics;
- the extent to which the availability of calculators and computers should change the content of what is taught or the relative stress which is placed on different topics within the mathematics syllabus.

Both of these matters are relevant to the work of primary schools.

Many teachers in primary schools feel some uncertainty about introducing calculators into their classrooms until more guidance is available than is the case at present. However, it is important to realise that the availability of a calculator in no way reduces the need for mathematical understanding on the part of the person who is using it; and the evidence from research studies is that the use of calculators has not produced any adverse effect on basic computational ability. There is as yet little evidence about the eventual balance to be obtained at the primary stage between calculations carried out mentally, on paper or with a calculator. However, it is clear that the arithmetical aspects of the primary curriculum will be affected by the increasing availability of calculators, not least in the home; for example, children who make use of calculators are likely to meet decimals and negative numbers earlier than is usual at

present, and to ask questions about them. Some calculators should be available in primary classrooms; these can be used as an aid to discovery and investigational work, to reinforce understanding of place-value and to enable children to deal with problems arising from real life in which the numbers involved can often be 'awkward' from a computational point of view.

### Links with other curricular areas

The experiences of young children do not come in separate packages with 'subject labels'; as children explore the world around them, mathematical experiences present themselves alongside others. The teacher needs therefore to draw mathematical experience out of a wide range of children's activities. When planning these activities, especially any extended topic or project work, the teacher should try to identify at the outset the mathematical possibilities which exist within them. Not all of these possibilities will necessarily be realised but by planning in this way it becomes easier to make the most of whatever opportunities present themselves and perhaps also, by appropriate discussion, to draw attention to others. The overall aim must be to develop in children an attitude to mathematics, and an awareness of its power to communicate and to explain, which will result in mathematics being used wherever it can illuminate or make more precise an argument or enable the results of an investigation to be presented in a way which will assist clarity and understanding.

### Range of attainment in mathematics

Teachers need to be aware, and to take account, of the very great difference in attainment in mathematics which can exist among children of the same age. For example, research evidence shows that an 'average' child can write down the number which is 1 greater than 6,399 at age 11 but not at age 10. However, there are some 14 year olds who still cannot do this correctly and some 7 year olds who can. Similar comparisons can be made in respect of other topics. There can therefore be a 'seven year difference' in the attainment of children at the age of 11 and so the mathematics curriculum in a primary school, as in other schools, needs to take into account the wide range of understanding and skill which can exist within a class. Efforts must be made to match the pace and level of work in mathematics to the attainment of pupils. This is not an easy task but is essential if confidence in using

mathematics is to develop.

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A consequence of the 'seven year difference' is that it is not possible to make any overall statement about the mathematical knowledge and understanding which all children of any given age should be expected to possess. This has important implications for those who are concerned with the preparation of guidelines and schemes of work, as well as with procedures for transfer from primary to secondary school.

### Organisation of mathematics teaching

The various methods which are commonly used to organise teaching groups for mathematics all have both advantages and disadvantages; no one method is universally suitable. However, all primary schools should examine the extent to which the form of organisation which they are using enables the best use to be made of the mathematical strengths of their staff and provides continuity of teaching in mathematics for the children in the school. In all but the smallest schools, a member of staff should be designated as 'mathematics co-ordinator'. It should be part of the duties of the co-ordinator to

- prepare a scheme of work for the school in consultation with colleagues;
- provide guidance and support for other members of staff in implementing the scheme of work;
- organise teaching resources for mathematics;
- monitor work in mathematics throughout the school;
- assist with the diagnosis and remediation of learning difficulties;
- arrange appropriate school-based in-service training;
- maintain liaison with other schools and with advisory staff.

The overriding task must be to provide support for all who teach mathematics and so improve the quality and continuity of mathematics teaching throughout the school. Good support from the head teacher is essential if the mathematics co-ordinator is to be able to work effectively, and some modification of the co-ordinator's teaching timetable is likely to be necessary in order to make it possible to work alongside other teachers. Appropriate in-service training for the co-ordinator will also be required.

## More about the report

This short introduction to the Cockcroft Report includes only a small part of the report's message for those who teach mathematics to children of primary age. There is much else in the report which is relevant to the work of primary schools. Among the sections to which no reference has been made are those on the differences in mathematical performance between girls and boys, the development of understanding and memory, the need to develop skills of estimation, the use of mathematics to solve problems, the teaching of mathematics to children whose attainment is high and to those whose attainment is low, the preparation of mathematics guidelines and schemes of work and the

particular problems of small schools. There are chapters in the report on assessment and continuity, and on facilities for teaching mathematics. The full scope of the report is indicated by the list of chapter headings which follows; those chapters which are especially relevant to the work of primary schools are indicated in bold type.

### Mathematics Counts: Contents

- Part one**
  - 1 Why teach mathematics?
  - 2 The mathematical needs of adult life
  - 3 The mathematical needs of employment
  - 4 The mathematical needs of further and higher education
- Part two**
  - 5 Mathematics in Schools
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  - 7 Calculators and computers
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- Part three**
  - 12 Facilities for teaching mathematics
  - 13 The supply of mathematics teachers
  - 14 Initial training courses
  - 15 In-service support for teachers of mathematics
  - 16 Some other matters
  - 17 The way ahead

### Reading list

- 1 **Mathematics Counts**. Report of the Committee of Inquiry into the teaching of mathematics in schools HMSO £5.75
- 2 **Use of mathematics by adults in daily life**. ACACE, 198 De Montfort Street, Leicester LE1 7GE £2.50 post free
- 3 **Primary education in England**. A survey by HM Inspectors of Schools HMSO £4.50
- 4 **Education 5 to 9**. An illustrative survey of 80 first schools in England HMSO £3.50
- 5 **Mathematics 5-11**. A Handbook of suggestions HMI Series: Matters for Discussion 9. HMSO £4.20



## Primary Science

Science is essentially an active exploration of the environment using all the senses. Scientists constantly pose questions and problems about the world around them. — they are constantly observing, questioning, experimenting and generating ideas.

If children are allowed to do what scientists do, then they will accumulate a vast store of experiences. — touching, smelling, cutting, mixing, measuring, describing, thinking and communicating. Primary school science is concerned with these practical activities and first-hand experiences. From these first-hand experiences will develop concepts which have meaning to each individual. Children will develop as curious and imaginative explorers of their environment and will be able to use an effective approach in solving problems, making decisions and organising their work.

Teachers often unnecessarily worry about their own lack of scientific knowledge. But science activities appropriate for primary schools depend more on attitudes of the teacher. It's the — "let's find out" — "I wonder what will happen" — "That's an interesting observation" — attitude that is important. They need only a willingness actively to explore, seek and wonder.

Learning with children is the key to success in primary school science.

## OBJECTIVES OF PRIMARY SCIENCE.

Primary School Science want children to attain :-

### ATTITUDES.

Interest in some discovering:  
Willingness to be involved in group work:  
Perseverance:

### CONCEPTUAL IDEAS.

Change / Stability  
Similarities / differences  
Time:  
Life cycle:  
Adaptation

### ENQUIRY SKILLS.

Observing:  
Setting up a fair test.

### MANIPULATIVE SKILLS.

Use of tools; scissors, hacksaws,  
thermometers, scales.  
Making and using models.  
Investigating things and materials  
by cutting and dissecting.

### SOCIAL SKILLS.

Working together.  
Qualities of leadership.

SELECTION OF CONTENT.

H.M.I's paper "Science in the Primary School" sets out the following broad criteria for the selection of content:

- a) the content should, whenever possible, be related to the experiences of the children
- b) it should, in accordance with their stages of development, provide them with knowledge and understanding of scientific ideas to help them to understand their own physical and biological environments and to understand themselves;
- c) it should, where possible, lay the foundations for a progressively deepening knowledge and understanding of scientific concepts and facts that will be useful to them as citizens;
- d) it should include examples of the application of science to real-life problems, including those of technology.

The scheme of work should :-

emphasise progression in content, concept and intellectual demand, and in scientific skills and processes, appropriate to the children's ages and abilities;

avoid risks of sex stereotyping;

identify the fundamental aspects of science to

## Priorities within Science Education

The essential characteristic of education in science is that it introduces pupils to the methods of science so that scientific competence can be developed to the full, work provided, at all stages, should give pupils opportunities to :-

make observations;

select observations relevant to their investigations for further study;

seek and identify patterns and relate these to patterns perceived earlier;

suggest and evaluate explanations of the patterns;

design and carry out experiments, including appropriate forms of measurement, to test suggested explanations for the patterns of observations;

communicate (verbally, mathematically and graphically) and interpret written and other material;

handle equipment safely and effectively;

use their knowledge in conducting investigations; and

bring their knowledge to bear in attempting to solve technological problems.

which every pupil should be introduced.

Secure appropriate differentiation for children of differing abilities;

contain not only a list of topics but also advice of on suitable approaches, on practical work that has been found successful and on resources that are available within the school and outside it;

be drawn up as a result of discussion between the H.T. and all of the staff, in the light of discussion of L.E.A. documents when appropriate and with support from staff outside the school;

reflect discussion with other primary schools and with the schools to which pupils will transfer, so that receiving schools are clear about the range and depth of the science education provided in the primary school;

"Science in Primary Schools" suggests that aspects of science that children should meet in the Primary school should include the study of:-

a) LIVING THINGS + THEIR INTERACTION WITH THE ENVIRONMENT.

b) MATERIALS AND THEIR CHARACTERISTICS.

c) ENERGY AND MATERIALS.

d) FORCES AND THEIR EFFECTS.

"SCIENCE 5-16 : A STATEMENT OF POLICY"

D.E.S. suggests that science education should attempt to provide the following 10 principles:-

a) BREADTH: all pupils should be introduced to the main concepts from the whole range of science; to the technological applications and social consequences of science; and to a range of scientific skills and processes.

b) BALANCE: all pupils should be able to continue their study of each of the main areas of science throughout the compulsory age range; and all science courses should achieve a balance between the acquisition of scientific knowledge and the practice of scientific method.

c) RELEVANCE: science education should draw extensively on the everyday experience of pupils, and should be aimed at preparing pupils as effectively as possible for adult and working life;

d) DIFFERENTIATION: the intellectual and practical demands made by science education should be suited to the abilities of the pupils, in ways which allow the highest existing standards to be maintained for the most able while catering fully for pupils unable to reach those standards and providing for all pupils the essential experience of broad and balanced science;

e) EQUAL OPPORTUNITIES: Science education should give genuinely equal curricular opportunities to boys and to girls and should in particular actively seek ways of exciting the interest of the girls in those aspects of science which some girls at present find unappealing or intimidating;

f) CONTINUITY: as science education develops in primary and middle schools, it is increasingly important for the schools to which pupils subsequently transfer to give attention to building on the foundations already laid; .....

g) PROGRESSION courses should be designed to give progressively deeper understanding and greater competence, not only within individual schools but also over the compulsory period as a whole, whatever the age of transfer between schools may be;

h) LINKS ACROSS THE CURRICULUM: in primary schools teachers should link work in science with the development of the language and mathematical competence of their pupils and with the practical component of the curriculum more generally; .....

i) TEACHING METHODS AND APPROACHES: Science is a practical subject, and should be taught at all stages in a way which emphasises practical, investigative and problem solving activity;

j) ASSESSMENT: progress in science should be assessed, both within schools and in public

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examinations, in ways which recognise the importance of the skills and processes of science as well as rewarding the ability to reproduce and apply scientific knowledge; and which allow all pupils to show what they can do rather than what they cannot do.



RESOURCES OUTSIDE THE SCHOOL.GLYNEDD COUNTY COUNCIL

MR J. DENNIS JONES - PRIMARY

MR. HYWEL WILLIAMS - MUSIC

MISS RITA JONES - P.E.

DR. GARETH ROBERTS - MATHEMATICS.

MR. GERAINT PARRY - SCIENCE.

MRS RHIANON LLOYD - CYMRAEG.

THE SCHOOL LIBRARY SERVICE.

~~Responsible for~~ Affair from changing the books in the school library once a term. They will also provide a selection of books on a given topic or project for class use.

They also have a limited selection of software for the computer.

Contact: <sup>chair</sup>

THE ARCHIVES SERVICE.

They have a large selection of teaching packs available for schools. They will also assist in searching for old documents relating to a particular study.

Contact: MRS MARY ARIES.

SCHOOL HEALTH SERVICE.

Experts available to visit schools and give talks. Films, filmstrips, and posters available.

Contact: MR. GARETH MORGAN.

ROAD SAFETY OFFICER.

Will provide a variety of resources in this field.

Contact: MR. ERIC JONES (Caernarfon) MR. ELWYN PARRY (Wangefri).

AUDIO VISUAL AIDS.

Have a selection of records, films and filmstrips available on loan.

Contact: MR. ELWYN LLOYD JONES.

LOCAL COLLEGES - U.C.N.W. & NORMAL.

Always willing to give support.

RESOURCES WITHIN THE SCHOOL.

SCHOOL LIBRARY

TELEVISION + VIDEO.

RADIO + CASSETTE.

COMPUTER BBC Model B + SOFTWARE.

~~ZX-81~~

CALCULATOR

~~BIG TRAK~~

BINOCULAR MICROSCOPES (2).

TEST TUBES, FLASKS ETC.

LANGUAGE MASTER.

LITTLE PROFESSOR.

DUPPLICATOR - SPIRIT + INK.

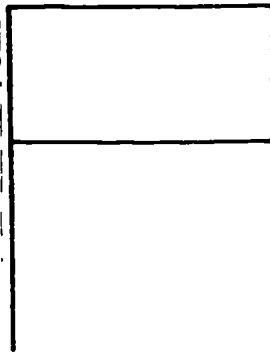
PROJECTOR - SLIDE + FILM STRIP.

Music -

WRITE IN YOUR BOOKS, NOT ON THE SHEETS.

SESSION II (REVISED)  
DEBUGGING

Debug the following FLAG procedure. It is supposed to draw a picture like this :-



```
FD 120
RT 90
FD 80
RT 90
FD 40
```

```
LT 90
FD 80
```

HINT

Draw the trail you get if you follow the commands. Work out which commands need changing to get the proper flag.

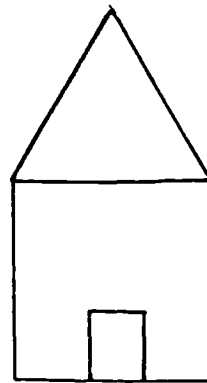
When you think you have found all the bugs try out your debugged procedure on the computer.

## ACTIVITY TWO

Type in the procedure below :-

```
TO HOUSE
REPEAT 4 [FD 100 RT 90]
REPEAT 3 [FD 100 RT 120]
PU
RT 90
FD 100
LT 90
FD 30
LT 90
FD 50
RT 90
FD 30
END
```

It is meant to draw a HOUSE which looks like this :-



Try it out by typing HOUSE.

There seems to be a bug in the program!

## ACTIVITY THREE

Try to debug the HOUSE procedure.

Imagine you are the turtle and try to follow the commands one at a time, as the computer would do.

The first instruction is :-

REPEAT 4 [FD 100 RT 90]

What does it tell you to do?

Is this what you need for the first part of the house?

If it's correct, go on to the next command - see how many bugs you can find and correct them.

When you come to the end of the procedure use the LOGO EDITOR to type in your changes.

Does the procedure work properly now?

If it doesn't there must be some more bugs for you to find.

**TURTLE PROJECT**

Write a procedure of your own choice, but include a bug in it.

Ask someone else to try to debug your program.

Make a drawing on graph paper of the pattern the procedure should draw once it has been debugged.

WRITE IN YOUR BOOKS, NOT ON THESE SHEETS.  
ALSO, MAKE A NOTE OF ANY PROBLEMS YOU MEET.

## SESSION 12 (revised)

### 12. CIRCLES AND ARCS

CIRCLES Write this heading in your book.

How can we get the turtle to draw a circle?

To draw a TRIANGLE you used a command something like

REPEAT 3 [FD 100 RT 120]

For a SQUARE you used

REPEAT 4 [FD 100 RT 90]

and for a HEXAGON

REPEAT 6 [FD 100 RT 60]

Can you see a connection between the NUMBER OF SIDES of a shape and the NUMBER OF TIMES we REPEAT the command?

A triangle has 3 sides and we REPEAT the command

[FD 100 RT 120]

three times.

Also,  $120 = 360 \div 3$ .

Look at the command for drawing a square which has 4 sides. We REPEAT our instruction 4 times, and the amount of turn is  $360 \div 4$ .

[?] → How many times do we REPEAT the command for our hexagon?

[?] → What is the amount of turn at each corner for a hexagon?

The command to draw any regular POLYGON can be written like this:

COPY THIS INTO  
YOUR BOOK.

[REPEAT no. of times [FD so many steps RT  $360 / \text{no. of times}$ ]

DO YOU UNDERSTAND IT?

/ means  $\div$  (divide by).

REMEMBER

The no. of times we REPEAT is equal to the number of sides of the polygon.

ACTIVITY ONE

Draw three regular polygons on the screen with sides 10 steps long, using each of these commands:

REPEAT 6 times  
REPEAT 10 times  
REPEAT 18 times

*Write down what you type in.*

You will notice that as you increase the number of sides the shape gets more and more like a circle.

? → How would you tell the computer to draw a shape that looks even more like a circle?

NOTE

If we tell the computer to draw a polygon with very many sides, the shape will look like a circle or at least part of a circle if the full circle will not fit on the screen.

? → How would you tell someone to move so that she traces out a circle on the ground as they move?

? → What is the total angle she would turn through if she followed your commands?

ACTIVITY TWO

Write a LOGO command using REPEAT to tell the computer to draw a circle.

Your command should look like the polygon - drawing instruction.

REPEAT no. of times [FD so many steps Rt 360 / no. of times]

*Copy the table into your book.*

Fill in the missing numbers in the table below.

REPEAT	360	[FD 1	RT 1]
	180	2	2

*Continued on the next page.*

120	3	.
90	4	.
60	6	.
45	8	.
40	9	.
30	12	.
20	18	.
15	24	.
10	36	.
5	72	72

To fill in the table, divide 360 by the number of REPEATS.

Try out the shapes each procedure draws.

#### ACTIVITY FOUR

Copy the table into your book.

Complete the following table. Make notes so that you know which numbers to use for small and large circles.

REPEAT	120	[FD 3	RT 3]
	90	3	4
	.	.	.
	.	.	.
	.	.	.
	.	.	.
	.	.	.
	5	3	72

HINT: 2 columns of this table are very similar to the first table.

Column 1

Column 3

? → In these tables, what do you notice about the number following REPEAT (Column 1) and the number following RT (Column 3)?

Hi → The two numbers (taken together) are related to 360. Can you see how?

#### ACTIVITY FIVE

~~How many circles of different sizes and colors can~~

~~draw?~~ Change the size of the FD in REPEAT 90 [FD.. RT4] to find the biggest circle you can draw, THAT FITS ON THE SCREEN.

#### ACTIVITY SIX

STOP HERE → DO ACTIVITY SIX NEXT WEEK.



FIRST

Write a procedure (in your books)  
to draw a circle  
Try it out on the computer.

How many degrees does the turtle  
turn through to draw a circle?  
What is the link between this  
number and the NUMBER OF  
REPEATS and the TURNING?

EXAMPLE

REPEAT 90 [FD 10 RT 4]

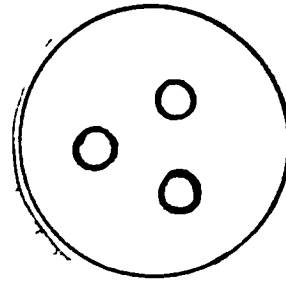
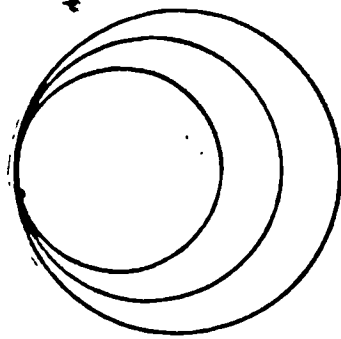
What is



the link between these two numbers?

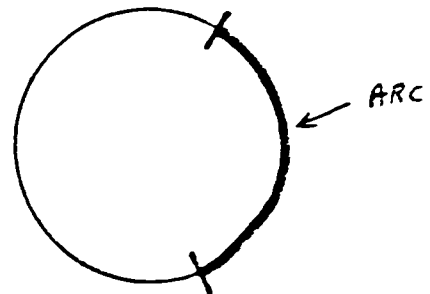
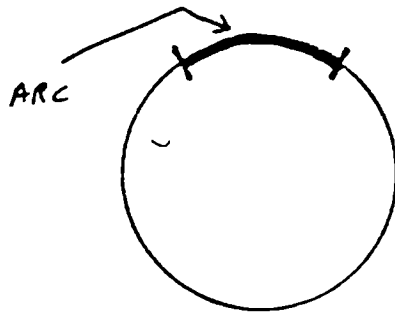
NOW start the work on ARCS  
(activity 7)

- (i) Write in your book the procedure you think will draw the design. (ii) Try it out on the computer. (iii) Debug if necessary. (iv) Write down any problems you have.



### ARCS READ EXTRA SHEET FIRST

An arc is part of a circle.



- How many degrees in total does the turtle turn to draw
- an arc which is a semi-circle?
  - an arc which is a quarter of a circle?

### ACTIVITY SEVEN

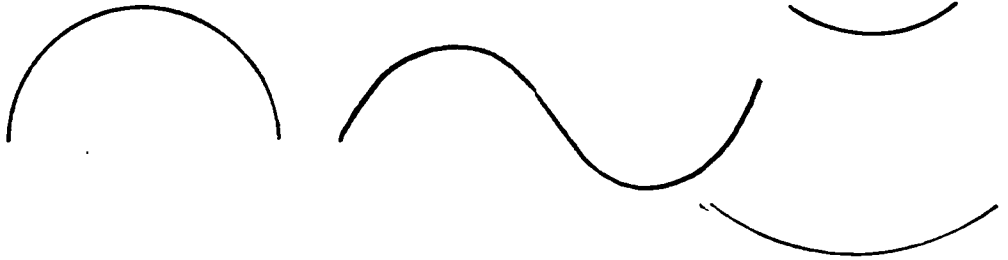
Write procedures to draw arcs which are

- half a circle
- quarter of a circle.



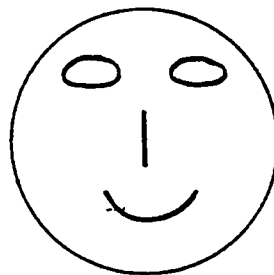
ACTIVITY EIGHT

Write procedures to draw arcs similar to those shown below.



TURTLE PROJECT

Write a procedure to draw a face.



These are the sheets for  
Session 14 that the  
children worked from.

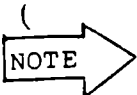
## SESSION 14 VARIABLES

ACTIVITY ONE. Write a procedure with a variable (:SIZE)  
for drawing SQUARES of any size.

Remember to add :SIZE after SQUARE on the first  
line of your procedure.

You must get the spacings correct.

no space  
FD :SIZE  
space

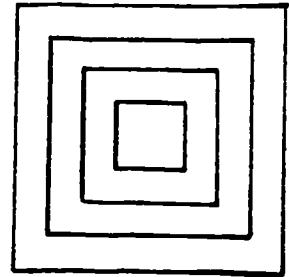
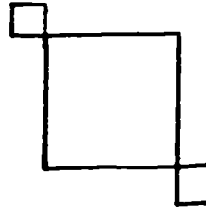
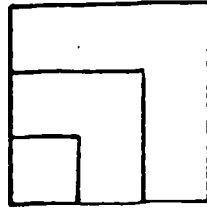


The computer needs to know if a procedure is going to  
need an input. The :SIZE after SQUARE tells the  
computer that we are going to use a procedure with  
input.

LOGO uses the symbol : to tell the computer to expect  
a number. So, :SIZE means the number we have  
typed in for the length of the sides of the square.

## ACTIVITY TWO

Write procedures to draw the following patterns made up from different sized squares.



## ACTIVITY THREE

Teach the computer new procedures such as

PENTAGON :SIZE and TRIANGLE :SIZE

## ACTIVITY FOUR

Write procedures to draw patterns of your own using INPUTS and the REPEAT command.

HINT

Keep a note of the procedures as you write them. You can add some of your more interesting patterns to the computer's dictionary.

We call the number we type after the procedure name a VARIABLE. For example in

SQUARE :SIZE

the number we type in for the size can vary.

:SIZE is the variable.

## TURTLE PROJECT

Design some shapes of your own using a variable in them.

Call the variable :SIZE

(You can use some other name for your variable so long as it has : in front of the name you choose)

## 15. MORE ABOUT SUBPROCEDURES

What happens when we define a procedure?

We give the computer a set of commands which it must carry out. It keeps the list of commands in its dictionary and only obeys them when you call up the procedure.

### ACTIVITY ONE

Call up your procedure to draw a square of size 100.

[ ] → What happened to the waiting prompt (?) while the computer was carrying out the procedure?

When ? is on the screen the computer is waiting for a command. You control the computer by giving it LOGO commands. If ? is not on the screen then the computer is busy - carrying out commands.

[ ? ] → What is controlling the computer while it is drawing your square?

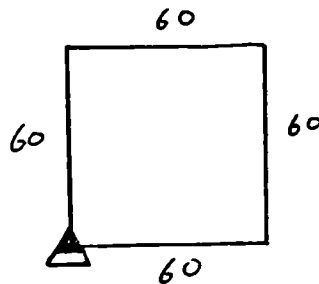
It takes its commands from the procedure you entered in the dictionary. The procedure is controlling the computer.

When the computer comes to the end of the commands, control passes back to you. The ? shows the computer is waiting for more commands from you.

Look at this example.

```
TO BOX  
  REPEAT 4 [FD 60 RT 90]  
END
```

When BOX is called the turtle draws a square of size 60.



The computer took its commands from the procedure BOX.

But what about this procedure?

```
TO SHAPE
  FD 50
  BOX
  FD 75
  RT 90
  BOX
  END
```

BOX is a subprocedure of SHAPE.

## ACTIVITY TWO

Draw the pattern the turtle would draw when the procedure SHAPE is called.

What happens when we call SHAPE?

The computer takes its commands from SHAPE. SHAPE is controlling the computer.

The first command is:

```
FD 50
```

Then SHAPE calls BOX.

Control now passes to BOX. The computer takes its commands from BOX. It draws a square of size 60. When it has finished all the commands in BOX, control passes back to SHAPE.

The computer continues with the next commands which are

FD 75  
RT 90

Then BOX is called once more. Control passes to BOX. When all the commands for BOX have been followed, control passes back to SHAPE.

In this example, there are no more commands in the procedure SHAPE, so control passes back to you.

The computer displays ? on the screen to show it is ready for more commands.



The computer is very careful about returning control. If you call a procedure, then the computer comes back to you when it has finished carrying out the procedure.

If a main procedure calls a subprocedure, then the computer returns to the main procedure after finishing the command in the subprocedure.

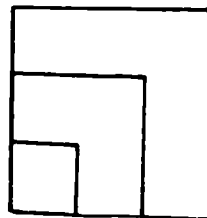
[?]

→ How many subprocedures are used in the FLAG procedure below?

TO FLAG  
FD 100  
SQUARE  
FD 40  
TRIANGLE  
HT  
END

(

In the last chapter we wrote a procedure for drawing a SQUARE with an input. We used the SQUARE-with-input procedure to draw this pattern.





We could write a procedure using SQUARE-with-input as a subprocedure to draw the same pattern.

### ACTIVITY THREE

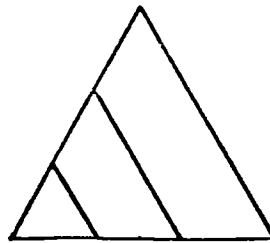
Try this procedure out at the computer.

```
TO THREESQUARES
  SQUARE 40
  SQUARE 60
  SQUARE 80
END
```

### ACTIVITY FOUR

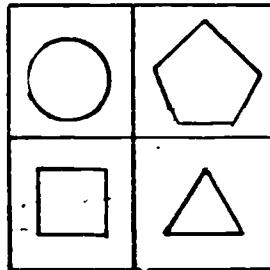
Look carefully at how the THREESQUARES procedure was built up from SQUARE :SIZE.

Write procedures to draw this pattern.



16. USING SUBPROCEDURES TO SOLVE PROBLEMS

Suppose we want the turtle to draw a complicated pattern like the one shown below.

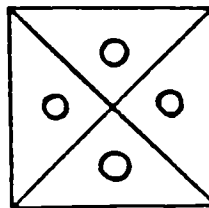


It would be very difficult to write out all the procedures in one go. So how would we go about it?

We could break the pattern down into smaller patterns.

We could then teach the turtle how to do each of the smaller patterns.

Look at the picture below.



?

→ How many different shapes can you see?

ACTIVITY ONE

Draw on a piece of paper each of the shapes that you can see. The shapes do not have to be exactly the same size as those in the picture.

One way to draw this pattern of shapes is to write a procedure for each shape.

#### ACTIVITY TWO

Write a list of commands to make the turtle draw one of the shpes.

#### ACTIVITY THREE

Try out your commands on the computer to make sure they work.

#### ACTIVITY FOUR

Write commands for another of the shapes and try them out on the computer.

Do this for each of the shapes in turn.

#### ACTIVITY FIVE

When you have checked all your commands, give a name to each procedure and enter them one at a time in the computer's dictionary.

We now need to join all the shapes together again to make up the picture. The shapes don't have to be centred exactly in the frames.

You will have to decide which shape is to be drawn first. Then choose the order for the other shapes to be drawn.

( Keep a note of the commands you type into the computer from now on - you will need them later.

#### ACTIVITY SIX

Call up your procedure to draw the first part of the picture.

When the turtle has finished drawing type

PU

#### ACTIVITY SEVEN

Move the turtle to the place you want it to draw the next shape.

DEBUG

Be careful to type PU to lift the turtle's pen when moving between shapes.

#### ACTIVITY EIGHT

Type

PD

and call up your second procedure.

DEBUG

Remember to give a PD command before drawing the next shape.

When the second shape has been drawn, check your notes to make sure that you have the commands written down correctly.

#### ACTIVITY NINE

Carry on moving the turtle and drawing shapes until you have built up the whole picture.

#### ACTIVITY TEN

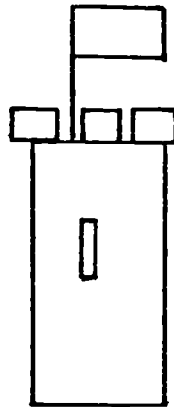
Think up a name for the complete shape and enter the commands to draw it in the computer's dictionary.

Try out the procedure that draws the full shape at one go by typing the name you have given it.

Although it took us a long time to work out how to draw the parts of the picture and to enter the procedures in the computer's dictionary, once they are in there, we don't have to go through it all ever again! (Provided we don't switch the computer off.)

#### ACTIVITY ELEVEN

Write procedures to draw this pattern.



It is useful when building up procedures (particularly for unconnected shapes) to include at the end of each one, commands to get the turtle back to its 'home' position, that is - centre screen, facing up.

TURTLE PROJECT

Write subprocedures and combine them to draw patterns of your own.

(DESIGNS USED IN CONJUNCTION WITH "INTERVIEWS" WITH CASE STUDY PAIRS)

WRITE PROCEDURES TO DRAW THE FOLLOWING LOGO DESIGNS.

TA - No

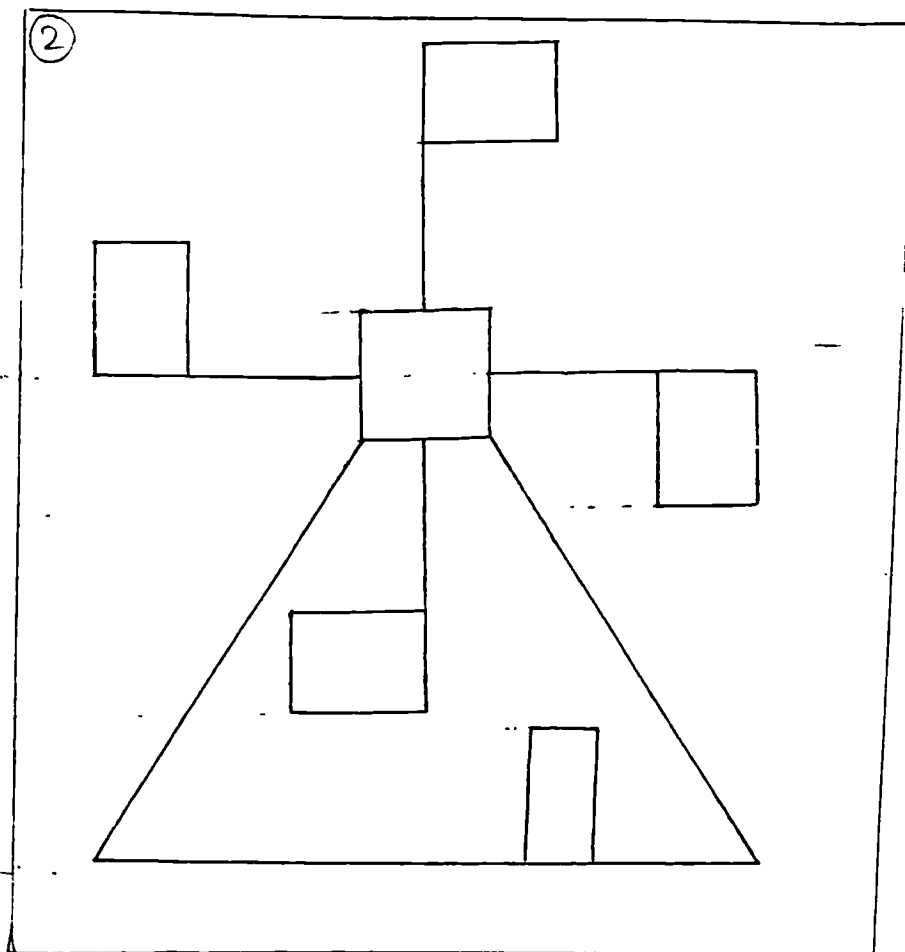
Begin by writing down how you will go about writing a program to draw the design.

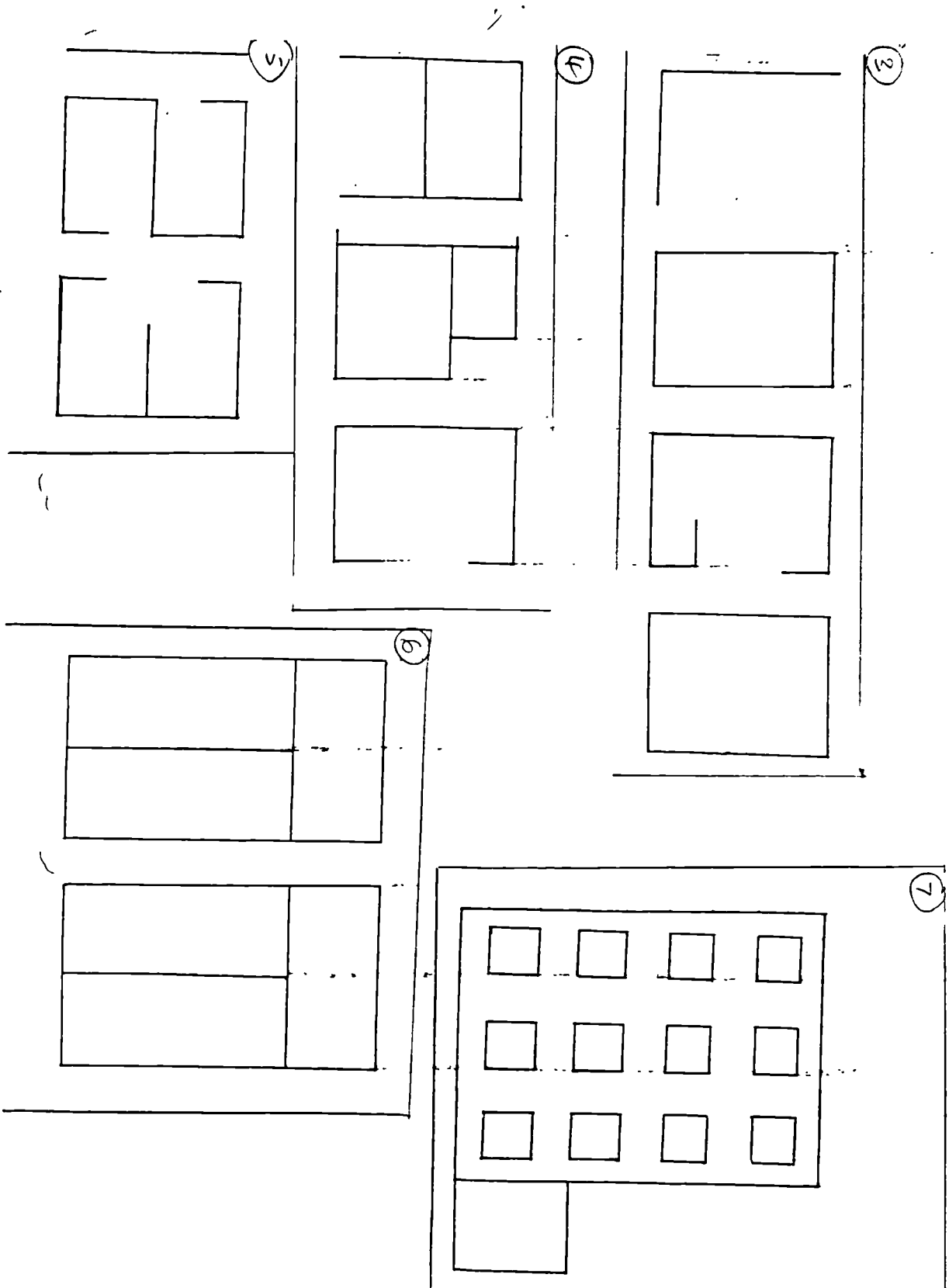
Mark on the paper where you want the turtle to begin each part of the drawing.

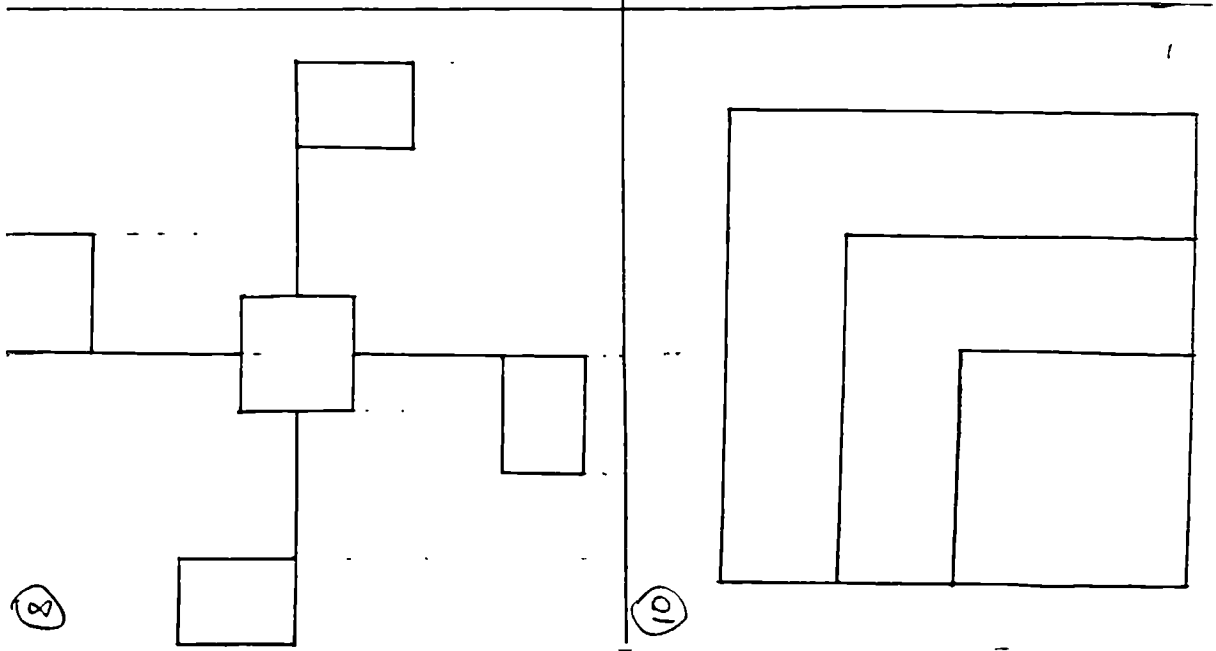
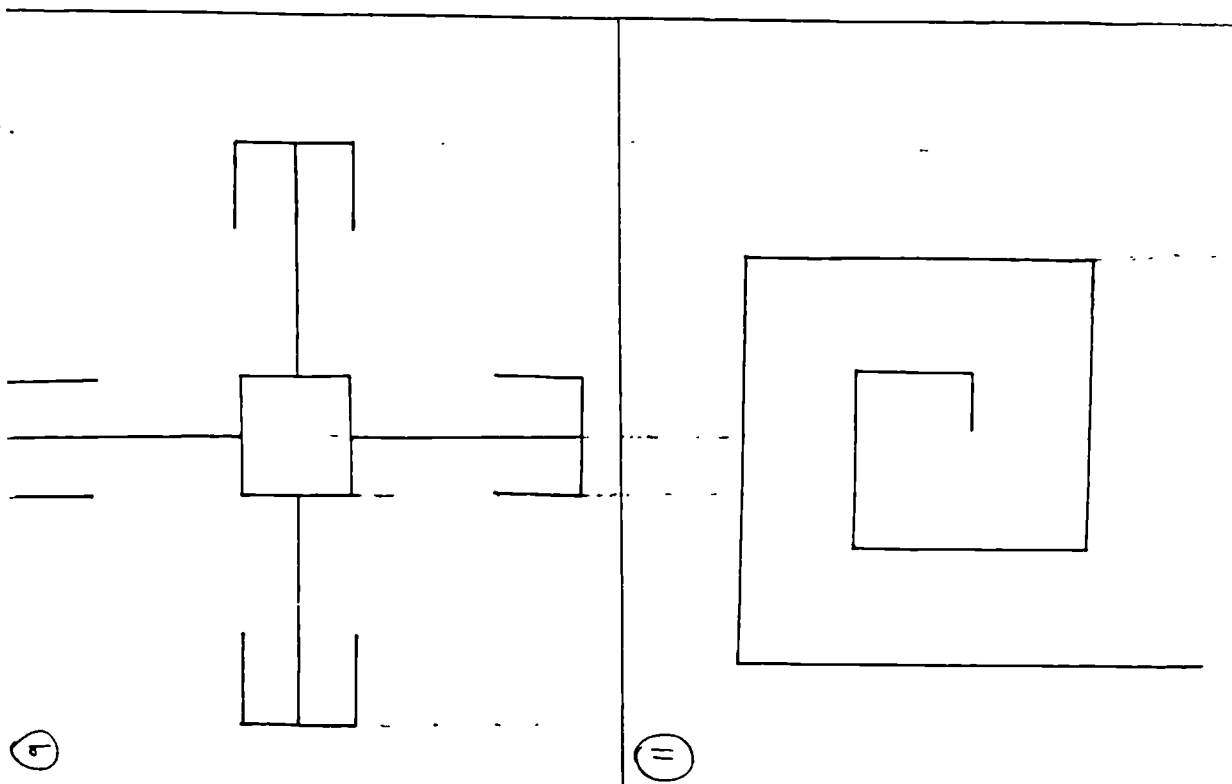
When you have finished, write about any problems you had.

①

DESIGN AND DRAW A SIMPLE FACE.

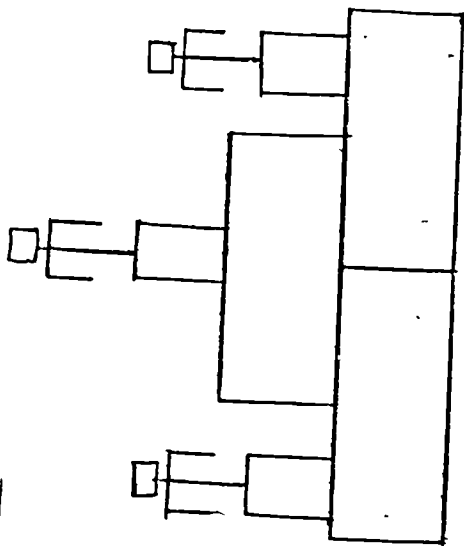




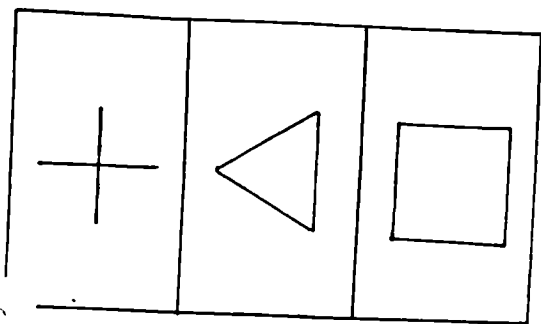




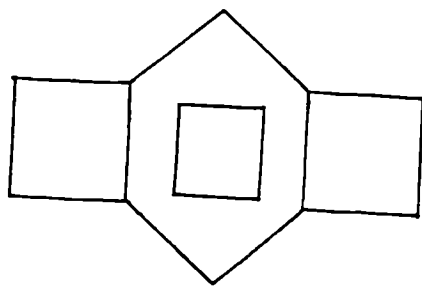
12 OLYMPIC



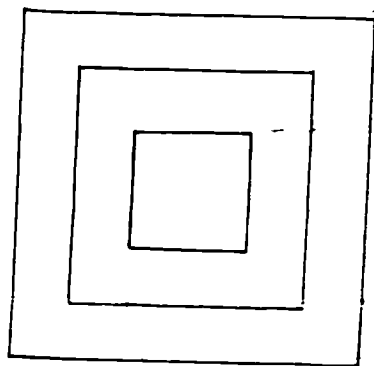
13



14



15



JUNIOR

## GRADED ARITHMETIC - MATHEMATICS TEST

METRIC EDITION

Prepared by P.E. VERNON, M.A., Ph.D., D.Sc.  
With the assistance of K.M. MILLER, B.A., Ph.D.

DO NOT OPEN THIS BOOK, OR WRITE ANYTHING, UNTIL YOU ARE TOLD

Name: Surname ..... First Names .....  
Age ..... Years ..... Months ..... Birthday .....  
Name of School .....  
Form or Year ..... City or Town .....  
Today's Date .....

INSTRUCTIONS This is a Mental Arithmetic Test. You can work the sums in your head, or do working in the margins if you need to.

Write your answers to each of the sums on the dotted line beside it. Make any alterations in your answers clearly.

You are not expected to do all the sums. You will be told the place where you are to start. Work on from there as quickly and accurately as you can, and do as many as possible. If a sum seems too difficult, do not waste time on it; miss it out and try the next.

If you finish one page, go straight on to the next.

Score for Blocks omitted at the beginning:	
Score for sums attempted:	Page 2
	Page 3
	Page 4
Total	

Mathematics Age	
Mathematics Quotient	

- 1 Draw a ring round the number three: 4 2 0 3 5
- 2 Draw a ring round the number ten: 6 10 11 15 9
- 3 Draw a ring round the number forty-three: 42 53 43 34 27
- 4 x x x x x x x x x Count how many crosses .....
- 5 Add:  $4 + 3$  equals .....

8+ and 9+ Start Here

- 6 Subtract:  $5 - 2 =$  .....
- 7 How many days in one week? .....
- 8 How many pence in one pound? .....
- 9 Multiply:  $3 \times 2 =$  .....
- 10 Fill in the missing numbers:  
 $9 - 5 - 6 =$  .....
- 11  $12 - 3 - 0 =$  .....

10+ Start Here


- 12  $14 +$  ..... = 21
- 13 Divide:  $12 \div 3 =$  .....
- 14 Subtract:  $\begin{array}{r} 13 \\ - 5 \\ \hline \end{array}$
- 15 Add:  $\begin{array}{r} 27 \\ + 14 \\ \hline \end{array}$
- 16 Four 10p and two 5p make .....
- 17 How many minutes in one hour? .....

11+ Start Here

- 18 Tom had some toy cars. He gave 5 to Jim and still had 16 left. How many cars had he to begin with? .....
- 19 Fill in the missing numbers:  
 $4 + 3 = 2 +$  .....
- 20  $3 \times 4 = 6 \times$  .....
- 21 Arrange these three numbers in any order so as to make the biggest number you can. What is the biggest number? ..... 6  
4  
9
- 22 425 means 4 hundreds, 2 and 5 ones. ....
- 23 If  $4 + 8 = 8 + x$   
Then  $x =$  .....
- 24 Add:  $\begin{array}{r} \text{£} \text{ p} \\ 6.77 \\ + 3.45 \\ \hline \end{array}$
- 25 Subtract:  $\begin{array}{r} 560 \\ - 192 \\ \hline \end{array}$

GO STRAIGHT ON TO PAGE 3

Page total

26 

This line is marked in centimetres. Guess how many centimetres long this line is: .....



27 Mary bought a record for £1.69. How much change did she get from £2.00? .....

28 Share £1.50 equally between 5 boys. How much will each one get? .....

29 When you divide 37 by 7, what is the remainder? .....

30  $30 \div 5 - 3 =$  .....

31 If  $72 \div a = 9$   
Then  $a =$  .....

32 63 days is the same as weeks. ....

33 Multiply:  $4 \times £3.37 =$  .....

34 
$$\begin{array}{r} 38 \\ \times 12 \\ \hline \end{array}$$
 .....

35 If  $z + (15 + 4) = (7 - 15) + 4$   
Then  $z =$  .....

36 Divide:  $8 \overline{) 272}$  .....

37  $43 - 8 + 15 - 4 =$  .....

38 If  $x - 17 = 23$   
Then  $x =$  .....

39 What is the biggest four-figure number that has 5 in the thousands place? .....

40 If one dozen notebooks cost 60p, how much do 5 notebooks cost? .....

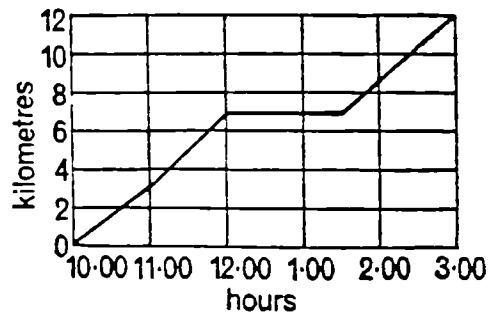
41 Which is the biggest of these fractions? .....

$\frac{2}{13}$     $\frac{1}{6}$     $\frac{1}{14}$     $\frac{2}{5}$  .....

42 Write in numbers: one hundred thousand and fifty-six. ....

43  $\frac{3}{4} + \frac{1}{2} =$  .....

44  $8 - 2\frac{1}{2} =$  .....



45 This graph shows the times and distances of someone walking 12 kilometres between 10 a.m. and 3 p.m.  
How long did he rest for lunch? .....

46 What was the greatest number of kilometres he walked in any single period of 60 minutes? .....

GO STRAIGHT ON TO PAGE 4

Page total

- 47  $\frac{37 - 9}{14} = \dots\dots\dots$
- 48 How many minutes in one whole day?  $\dots\dots\dots$
- 49  $3y + 2 = 14$   $y = \dots\dots\dots$
- 50 Write three other fractions in this set:
- $\left\{ \frac{1}{2}, \frac{5}{10}, \dots\dots\dots \right\}$
- 51 One side of a square is 14 cm. What is its perimeter?  $\dots\dots\dots$
- 52 If  $\frac{3}{5} = \frac{b}{30}$  then  $b = \dots\dots\dots$
- 53  $2(12 - 5) = \dots\dots\dots$
- 54 A rope measures 7.5 metres. How many lengths measuring 1.25 metres can be cut from it?  $\dots\dots\dots$
- 55 Write  $\frac{3}{4}$  as a percentage.  $\dots\dots\dots$
- 56 Simplify:  $\frac{2}{3} \times \frac{1}{2} = \dots\dots\dots$
- 57  $5\frac{1}{4} + 3\frac{1}{3} = \dots\dots\dots$
- 58 Write 0.25 as a fraction, in simplest terms.  $\dots\dots\dots$
- 59 The average of 2, 4, and 9 is  $\dots\dots\dots$
- 60
- 
- In this figure, which angle is equal in size to  $\angle T$ ?  $\dots\dots\dots$
- 61 A block of wood measures 6 cm by 5 cm by 4 cm. What is its volume?  $\dots\dots\dots$
- 62  $P = 3, Q = 2. P^2Q = \dots\dots\dots$
- 63 Write fifteen thousandths as a decimal.  $\dots\dots\dots$
- 64 What prime numbers are there between 20 and 30?  $\dots\dots\dots$
- 65  $2.2 - 0.04 = \dots\dots\dots$
- 66 How many minutes between 10.40 a.m. and 1.20 p.m.?  $\dots\dots\dots$
- 67  $20 \div \frac{1}{5} = \dots\dots\dots$
- 68 Yesterday, 21 out of 300 children in a school were absent. What percentage is this?  $\dots\dots\dots$
- 69  $12 \div 0.25 = \dots\dots\dots$
- 70 What is the square root of 400?  $\dots\dots\dots$

10 House  
~~1000~~ 4 [ FD 100 RT 90 ] ✓  
Repeat  
Repeat 3 [ FD 100 RT 120 ]

Repeat 4 [ FD 100 RT 90 ] /  
Repeat 3 [ FD 100 RT 120 ] /

RT 90

031 03

$$= RT_{90}$$

FD, 30

L770

FD 50

0550

FD 30

141

TO House  
RT90

Repeat 4 [FD100R 190]

Repeat 3 [ P0100 120

26

FD 100 /

RT 90 ✓

1000

RT 90 /

05 07

100

3

FD

RT 90

30  
LP

0019

12

TO DO

Trid

EXTRACTS FROM  
LISA'S LOGO  
WORKBOOK

## EXTRACTS FROM

LICA'S LOGO

# WORKBOOK

TO ?

BCircle

RT 90

PU

FD 75

LT 90

PD

SCircle

PU

RT 90

FD ~~85~~ 300

LT 90

PD

SC RCL

EA

LT 90

LT 20 ) 110 -- 35

FD 200

TX

LT 45.

CH

110

To Nose  
FD 30  
END

To Mouth

RIGHT TO ugh

B.c.rcl  
PU  
RT 40  
FD 30

Sc.rcl = Eye  
B.c.rcl = Head  
Nose = Line = Nose  
Mouth = ucl = Mouth

WFCNY  
To ugh

B.c.rcl  
PU  
RT 40  
FD 30  
LT 40  
Nose  
PU

LT 45  
FD 100  
RT 45

~~Eye~~  
Eye ~~Sc~~  
Sc

Bx 50  
LT 40  
FD 100  
RT 40  
FD

Sc.rcl

PU  
RT 40  
FD 30  
LT 40

PU  
RT 180

FD 200

RT 40  
FD ~~30~~ 60  
WFCNY

~~Sc~~  
RT 90  
PD  
No. 11  
END

X

LT 90

PD

Nose

PU  
LT 45

FD 100

RT 45

Bx 50

LT 90

FD 100

RT 90

PI

Sc -1

PU

RT 40

FD 50

LT 40

PU

Sc.rcl

PU

RT 190

FD 200

RT 90

FD 60

RT 40

PD

WFCNY

END



TO FORT

PU  
BK59D

Rec 300 100

PU

FD 300

Rec 25 +10 12

RT 90

FD 20 <

RT 90

S 30

RT 90

FD 30

LT 90

Flag

← FD 160

FD 160

LT 180

PU

S 30

RT 90

FD 30

LT 90

Rec 25 12

PU

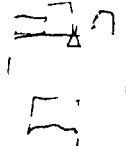
RT 180

FD 60

PD  
Rec 15 50

END

FD 160



# OLYMPIC

TO rex : SIZE : NUM  
Repeat 2 [ FD : SIZE LT90 FD : NUM LT 90.  
End.

TO LESH

FD 75  
LT 90  
PU  
BK 25  
RT 90  
PD  
FD 25  
LT 90  
FD 50  
LT 90  
FD 25  
L 90  
PU  
FD 25  
PD  
LT 90  
FD 35  
R 90  
FD 15  
LT 93  
Rex 15 30  
End

P. TO OLYMPIC ✓  
Bu 100 ✓  
PD ✓

RT 90 ✓  
PU ✓  
FD ✓  
LT ✓  
PD ✓  
Rex ✓  
FD ✓  
LT 9 ✓  
FD 10 ✓  
90 ✓

R ✓  
FD 75 ✓  
90 ✓  
100 ✓  
FD ✓  
FD 65 ✓  
R 90 ✓  
LeSH ✓  
FD ✓  
FD 25 ✓  
L 90 ✓  
FD 65 ✓  
RT ✓  
FD ✓  
FD 75 ✓  
RT 90 ✓

Rex 100 50 bug!  
FD 100 ✓  
LT 90 ✓  
R 75 ✓

RT 90 J  
LeSH ✓ Bu  
PU ✓  
BK 25 ✓  
L 90 ✓  
FD 15 ✓  
LT 90 ✓  
FD 10 ✓  
FD 25 ✓  
FD 90 ✓  
FD 25 ✓  
FD 25 ✓  
LeSH ✓  
End ✓

good

PU  
BK 100

Repeat 25 [FD 5 RT 2] [RETURN]  
End

Face

First of all define an eye then the line then the mouth  
then the big circle in the middle around everything

TO FACE

What are the subprocedures? = ~~Eye~~ Line Mouth  
Scircle ~~Circle~~ ~~Head~~ Bcircle

Scircle = Eye  
Bcircle = head  
Nose = Line = Nose  
Mouth = Arc = Mouth.

EXTRACTS FROM  
EVERLYN'S LOGO  
WORK BOOK

Tongly ✓

Bcircle ✓

Pu ✓

RT 90 ✓

~~FD~~ FD 300 ✓

LT 90 ✓

NOSE ✓

Pu ✓

LT 45 ✓

FD 100 ✓

RT 45 ✓

~~EYE SCIRCL~~

BK 50 ✓

LT 90 ✓

~~RT 90~~ FD 100 ✓

PD ✓ RT 90 ✓

SCIRCL ✓

Pu ✓

RT 90 ✓

FD 300 ✓

LT 90 ✓ PD ✓

~~SCIRCL~~ PD LT 90 ✓

Pu ✓

RT 130 ✓

FD 300 200 ✓

RT 90 ✓

FD 130 ✓

RT 180 ✓

PD ✓

Mouth ✓



To QW: size

RPT 4, [FD: size RT 90]  
End.

QW

To Empire

QW 45

PU

RT 65

PD

QW 50

PU

QW 60 FD 60

PD

QW 70

PU

FD 65

PD

QW 70

PU

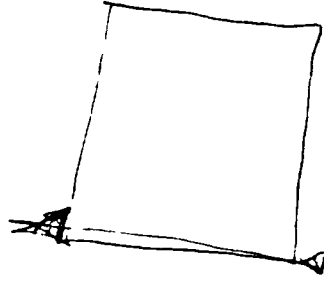
RT 90

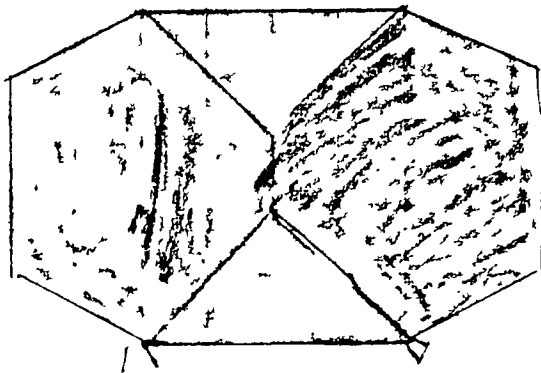
FD 70

PD

QW 70  
FD 70  
QW 70  
PD  
RT 90  
FD 200  
RT 90  
FD 70 FD 90  
LT 90  
LT 180  
RT 90  
QW 45 39

\*cat  
Barrl ✓  
flag  
house ✓  
LE 1-5  
rise  
Scird  
Semiz  
Turnel  
X  
ab.  
empire  
gun  
JJ  
mudh  
QC  
semiz  
slg  
Ugh  
S





First of all I will  
define the 6 sided shape +  
then put everything  
together.

To hex.

~~BK 100~~

PU

BK 100

LT 45

PD

FD 100

RT 45

FD 150

RT 45

~~PD~~

FD 100

RT 90

FD 150

RT 45

FD 75

Move turtle around a certain  
place on the screen.

RT 45

FD 150.

End.

2 6 sided shapes with 2  
lines joined to them, underneath  
and at the top.

This is the procedure  
for the 6 sided shape.  
now all I have to do is  
save it and put every-  
thing together.

TO LJD

HEX

PO

LT180

FD 285

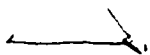
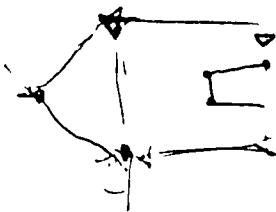
BT 12345

PO

HEX

END.

Yhe bit when I was joining the two six sided  
was the only difficult part.  
shapes together. Other wise it was easy I think  
it was all worth it in the end.



RT 90  
FD 100  
LT 180

Buged

To House

Repeat 4 [ FD 100 RT 90 ]  
Repeat 3 [ FD 100 RT 120 ]

PU  
RT 90  
FD 100  
LT 90  
FD 30  
LT 90  
FD 50  
RT 90  
FD 30  
End

Be Buged

To House  
Repeat 4 [ FD 100 RT 90 ]

FD 100  
RT 90  
FD 100  
LT 180

Repeat 3 [ FD 100 RT 120 ]

PU  
RT 90  
FD 100  
LT 90  
FD 33  
PD  
RT 90  
FD 33  
LT 90  
FD 33  
LT 90  
FD 33

End

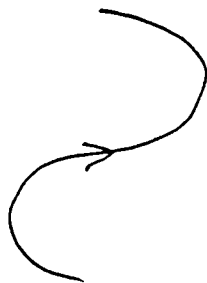
EXTRACTS FROM  
GEORGE'S LOGO  
WORKBOOK



To  
 Report 1200 L 513 RT 33  
 Report 90 L 513 RT 63  
 Report 60 L 513 RT 63  
 End

To Fare  
 Report 1200 L 513 RT 33 Big  
 PU  
 RT 90  
 513 100  
 LT 90  
 PD  
 Report 90 L 513 RT 43 Small  
 PU  
 RT 45  
 513 100  
 LT 45  
 PD  
 Report 90 L 513 RT 43  
 PU  
 RT 207  
 PD  
 Report 90 L 513 RT 43

Repeat 90 L Jd 3 (Rt 4)



20 SUN  
 Face  
 PU  
 Rt 90  
 Jd 315  
 Lt 90  
 PD  
 Jd 100  
~~BK 20~~  
 PU  
 Jd 100  
 Lt 90  
 Jd 100  
 Rt 90  
 Eyes  
 PU  
 Rt 90  
 Jd 200  
 PD  
 Eyes  
 PU

Rt 180  
 Jd 100  
 Jd 100  
~~Rt 90~~  
~~Jd 20~~  
 Rt 90  
 Jd 20  
~~PU~~  
~~BK 20~~  
 Jd 20  
 Rt 90  
 Jd 100  
 Lt 90

FACE  
 EYES  
 SUN

70  
 PK  
 77  
 74  
 75  
 76  
 77  
 78  
 79  
 80  
 81  
 82  
 83  
 84  
 85  
 86  
 87  
 88  
 89  
 90  
 91  
 92  
 93  
 94  
 95  
 96  
 97  
 98  
 99  
 100

~~Part~~  
 RBT 50  
 RT 90  
 JD 2  
PU  
 JD 50  
 LT 70  
 JDISO  
 R 160  
 JL 300  
 RT 90  
 JD 550  
 LT 120  
 JD 550  
 RT 90  
 JL 100 ✓  
 LT 90 ✓  
 0 7

✓ 1521 ✓  
✓ 1011 ✓  
✓ 100100 ✓  
✓ 06 RT ✓  
✓ 10011 ✓  
✓ 9015 ✓  
✓ 1111 ✓  
✓ 0811 ✓  
✓ 100301 ✓  
✓ 1501 ✓  
✓ 100704 ✓  
✓ 5717 ✓  
✓ 100305 ✓  
0611

No. Used  
 29-11-20  
 BK 300  
 AD  
 FD 100  
 BH 100  
 KT 45  
 JD 100  
 BK 100  
 KT 95  
 JD 100  
 KT 100

NOV 17 1967

11-5-79

TOILET

To 2lag-  
 FD 600 300  
 RT 90  
 FD 300 150  
 RT 90  
 FD 300 150  
 RT 90  
 FD 300 150  
 RT 90  
 BK 300 150

end  
 To 2lag  
 FD 120  
 RT 90  
 FD 80  
 RT 90  
 FD 40

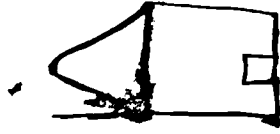
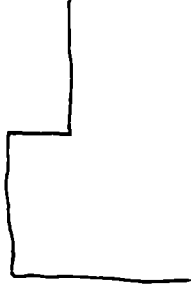
LT 90  
 FD 80  
 end

FD 22.5  
 RT 90  
 FD 150  
 BK 150  
 LT 90  
 BK 22.5

# AUTUMN TERM

Nr 12- 1985.

FD 150  
 RT 90  
 FD 75  
 LT 90  
 FD 150  
 RT 90  
 FD 75  
 RT 90  
 BK 300



3/33



EXTRACTS FROM  
 NORMAN'S LOGO  
 WORKBOOK

To House

Repeat 4 [FD 100 RT 90]  
Repeat 3 [FD 100 RT 120]

pu  
RT 90  
FD 100  
LT 90  
FD 30  
LT 90  
FD 50  
RT 90  
FD 30  
pu  
end

To House

Repeat 4 [FD 100 RT 90]  
FD 100  
RT 90  
FD 100  
LT 180  
Repeat 3 [FD 100 RT 120]

pu  
RT 90  
BK 100  
LT 90  
FD 33  
FD  
RT 90  
FD 33  
LT 90  
FD 33  
LT 90  
FD 33  
end

Repeat 120  
90  
60  
45  
40  
30  
20  
15  
10  
5

[FD 3  
[FD 3  
[FD 3  
[FD 3  
[FD 3  
[FD 3  
[FD 3  
[FD 3

RT 3]  
RT 4]  
RT 6]  
RT 8]  
RT 9]  
RT 12]  
RT 18]  
RT 24]  
RT 36]  
RT 72]

Biggest.

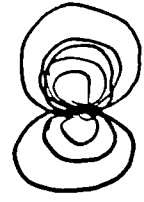
Smallest.

Repeat 90 [FD 22 RT 4] is  
the Biggest that will fit on the  
screen.

do happy 15  
Repeat 40 [FD ~~22~~ RT 9]  
Repeat 90 [FD ~~22~~ RT 4]  
Repeat 120 [FD ~~22~~ RT 3]

end

do Big  
Repeat 120 [FD 14 RT 3]  
Repeat 90 [FD 14 RT 3]  
Repeat 90 [FD 14 RT 3]



Repeat 90 [FD 3 RT 4]

Repeat 60 [FD 3 RT 3]

To eyes

Repeat Face

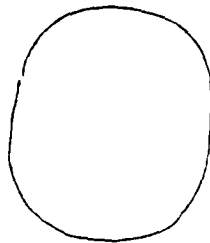
To eyes

Repeat 30 [FD 2 RT 25]

To Nose

FD 100

end



To Gun	PU
FT 50	RT 90
HT	FD 250
FACE	PD
PU	LT 90
RT 90	EY
FD 315	PL
LT 90	RT 180
PD	FD 250
NCSE	PD
PU	SEMI
FD 75	PU
LT 90	BK 220
FD 165	RT 90
RT 90	FD 175
PD	RT 90
EY	PD
	UFD
	END



To Fish

Set PC 14

~~Repeat 30 [FD 100 RT 90 PD FD 50~~

To Fish

Set PC 14

Repeat 35 [FD 25 PU RT 90 FD 25 PD  
LT 90]

end

To Fish Shoal

RT 15

PU

BK 600

PD Fish

RT 15

BK 650

Fish

PU

BK 30

RT 25

BK 380 420

PD

LT 25

~~RT~~

~~Fish~~

PU

Home

LT 45

BK 400

LT 35

PD

o: Black

FIELDNOTES MADE IN CALIFORNIAN SCHOOLS: CASE RECORD.

MONTE VISTA and LA PATERA.

MONTE VISTA.

CODE: MVq1

DATE: Wednesday 23rd April 1986, Thursday 24th and Friday 25th.

SCHOOL: Monte Vista, Santa Barbara. Elementary school.

"Micro-teacher": Ina E. Has been working there for one year, mornings only.

All aged pupils use the micros.

Micro-lab for 3 years.

Micro-lab timetabled - each class ~1 hour per week.

Uses: word processing, simulations/adventure games, reinforcement programs, Logo.

Mostly children work at the computer alone, although sometimes in pairs.

CODE: MVq2

Headteacher: Dr. John E.

Number on roll: Approx 400: 16 classes (including 2 kindergarten)

Details of Hardware: Micro-lab with 30 commodores networked + 6 disk-drives + 6 printers and other set-ups in classrooms.

Staff use: Not many staff use micro set-ups in their classrooms but most utilize the micro-lab.

Micro-lab for 3 years.

Staff have had in-service training.

CODE: MVq3

The micros are used for Logo: 10/11 year old particularly, but the Head has written a single-key version for young children.

From Fieldnotes.

CODE: MVf1

DATE: 23rd April 1986.

Arrived at 9am (school actually starts earlier).

Before arriving, found out some info from CT: the school has a

micro-lab with 30 commodores networked together, and printers and disk-drives. There is a micro-teacher, Ina E. who works in the school every morning and organizes the computer activities (she is doing an M.Ed. course at U.C.S.B. also). The Head is called John E. - the "principle". He is very keen on computers, and dogs, but especially children. Apparently he's real difficult to get hold of because he's always with the children.

Went to the micro-lab, through the library. There before the class arrived. Apparently Ina E. was doing some introductory work with the class, before it came to the lab. The first class were timetabled from 9.10 - 10am. They were a class of 8, 9 and 10 year olds - about 20 + class teacher + teacher's aide (a parent).

ODE: MVf2

Today, they worked on an adventure program. Basically a story unfolds about a haunted house, but the children are able to decide out of 2 or 3 choices, what happens next (e.g. whether the door is answered or not, whether they go upstairs or leave the house). The children were working in pairs (the older ones partnered younger ones). But it was unusual for children to work together. Normally they work alone with headphones on! The teacher commented that it wasn't usual for them to work alone, so it'll be noisy! It was the first time these children had used this program. Ina E. had tried to emphasize the decision making part by getting them to draw flow charts of decisions they made. I don't think this worked too successfully because the children were more interested in what was happening next rather than making notes about their decisions (but this isn't unusual).

Generally, there were good responses to the program and its graphics. The story quite quickly comes to an end but the children are then able to decide if they want to go through the house again. Some went through several times.

ODE: MVf3

At several points, the teacher and Ina E. reminded the children that flow charts had to be written down. At the end they were told to write out one of their stories today and draw pictures to go with it.

They did this later. They still worked in the same pairs.

During "recess" I talked to Ina E. and learned that the micro-lab was timetabled so that each of the 16 classes get about one good hour each.

I also found out that the micro-lab had been in existence for about 3 years and had come about as a result of a fire which had

burnt the library and the pottery room, so with the insurance money they built a new library and micro-lab.

I asked what the computers were used for:

(1) Logo - the Principle is very keen on this and

CODE: MVf4

has written a single key version of it for the very young children to use - press any key and something happens.

(2) Word Processing - used throughout the school.

(3) Basic skills reinforcement programs - seen as being quite useful.

(4) Decision making programs - like the one used this morning.

They have a very big software library which the Principle has kind of catalogued: with each disk there is a note about what it is about and what age it is suitable for and other comments.

Ina E. spoke of the time problem. She hasn't used Logo as much as she'd have liked, or intended (she has only been there a year and plans to leave shortly). Also, she'd like to get into databases, but hasn't found the time yet.

After Recess:

To class timetabled for micro-lab: Ina E. explained what they'd be doing. She had loaded and set running the "Magic Spells" program. The children had used this program

CODE: MVf5

before. Basically, it is a drill-and-practice spelling program which takes words and scrambles them, or flashes them on the screen and the children have to spell the words correctly. I didn't think it was very exciting, but Ina E. reckoned it was quite good because children are able to type in their own lists if they like. This is what happened today. The children each had a list of 15 words - 2 lists, one being slightly easier than the other. They first had to type this list in. These children were 9, 10 and 11 year olds, but a different class from this morning. But there was one big fault with the program - if the children copied a word in incorrectly and pressed return, the whole list had to be typed in again from scratch. In fact a lot of children (working individually) spent most of the time trying to type in the list. However, when they had done this, the computer presented the scrambled words one by one, and the children had to spell them correctly - if they did, a "treasure chest" was opened.

I couldn't really see the point of getting the children to type in the list - what were the children learning? And another fault: if a misspelt word went by unnoticed at the typing-in stage, then it would appear in the scrambled form (as did happen with CANFORM instead of CONFIRM). But one good thing about it,

CODE: MVf6

if they incorrectly spelt a word, at least they were informed of letters in the right place.

Generally, I wasn't impressed with the program.

1.30 - 2 pm: John E. with a class of 10/11 year olds working with Logo. Normally an hour session, but children were training for the "jogothon" tomorrow so finished early. The session was already in progress by the time I joined it.

Some of the children were working in pairs, but the majority were working individually. All the children were drawing rockets. The class teacher was also there.

One disappointing thing: down one side were 4 boys each at a computer, but the boy at the end was working on his own and the others were copying him, which was pretty difficult as they could only see his procedure in edit mode. Anyway, the boys got told off for talking!

I spent most of the time watching two girls. They had written the procedure:

CODE: MVf7

TO ROCKET

BODY

GLUE

CAP

GLUE1

WING

GLUE2

WING2

END

They had a bug with WING. I tried to help but couldn't easily as they were using position co-ordinates to move it and that was where the bug lay, and I did not know the position co-ordinates. John E. managed to solve the problem for them.

I was interested to see that they used subprocedures and especially interested to see them using move (GLUE) procedures. I believe this tactic had been "taught". At the end I talked briefly with John E. - he's very keen and gave me some worksheets he'd used with the children - about x and y co-ordinates. I think he does a lot of Logo "teaching" but also lets them explore too. He also mentioned Piaget. He's au fait with the philosophy..

General Comments:

This schools is exceptionally well resourced. But this is not the norm. I don't think they are doing

CODE: MVf8

anything better or more educational for all their equipment. But more equipment certainly solves some practical problems - the whole class can use them together. But I don't think more equipment is the answer to increased educational advancement. What is? Dedicated staff?

CODE: MVf9

DATE: Thursday 24th April 1984

In-service training afternoon with computers: 1 - 4 pm.  
With Vicky Bruce ("Sticky Bear", "Kid Writer" and "Print Shop") and Becky Snyder (Logo). Becky from La Patera school.

Apparently these in-set afternoons are quite frequent. They seem like a good idea. This was an "in school" in-set afternoon - the teachers get an afternoon off teaching and the atmosphere is informal. In this case, the two who came along to take the sessions were both teachers themselves, but teachers with a specialism.

The afternoon began with a general meeting. The parents raise \$17,000+ each year, but as a result, they expect a say in what goes on in the curriculum. This can cause problems.

After this brief general meeting the teachers split into two groups - teachers of younger children, and those of the older ones. Vicky B. took the younger ones and Becky S. the others. CT stayed with Becky; I went with Vicky.

CODE: MVf10

Insert: When we arrived, talked with Vicky - she seemed interesting - talked of the importance of children working together and the proponderence of "rubbish" programs about.

Vicky B. Session: (with kindergarten to 9 year old teachers).

Vicky is now a 1st grade teacher.

She began by saying that computers are fearful for most teachers - justifiable to an extent because we don't know everything about them, and sometimes can't understand why they have broken down. But at the same time, they are very difficult to damage or harm.

She then went on to say that the afternoon's session would be about computers and language (rather than maths) and that we'd be looking at "Kid Writer", "Print Shop" and "Sticky Bear".

She explained what these were about: they're kind of word processing programs, but not really - like newspaper writers - you can print a choice of graphics, different types of font, to make greeting cards, posters, banners, headed note paper etc..

CODE: MVf11

She talked about "Sticky Bear" - apparently made by "educational" programmers - the first ("S.B.") very good, but others hopeless. But teachers expect the other to be just as good so a problem.

With "SB", there is scrolling and longer stories can be written. It's exciting - good pictures and it prints colour. She compared "SB" with "Kid Writer": "SB" technically better. But with "KW" it is possible to change the size and shape of the letters and numbers.

Vicky's Rule:

Never allow a child to work at the computer on his/her<sup>own</sup>^ They stimulate and help each other and ask questions of each other. The decisions that are made about the development of the story have to be justified to each other.

She spoke about the work she had done with this type of program. Children had written poems and produced good presentation with "SB". And 1st grader's hand-writing not so good, but with typing, they have produced good finished products which have been sent home (parents pleased with the results). Using "Print Shop" she had produced folders on different themes - e.g. MAY. Each child had its own folder. These themes were only intended to last 3 weeks. In them is the alphabet, to be used for a spelling bank. The class then has brain-storming sessions: what does MAY mean for you - what animals/plants are appropriate to MAY, events etc. - these become story starters - leads to good stories - finished

CODE: MVf12

product is kept in the folder. She reported that children now never asked: "What can I write about?". She also had other theme folders which were more long-lasting - eg. a term's work. When a child has written a story the teacher corrects the spellings and asks: "Do you want to publish this, or send it home today as it is?" Some publish, others don't. The decision is the child's.

At this point the Principle came in and announced that the commodore micros wouldn't print "KW". This news was somewhat devastating as Vicky had intended to concentrate on this package in the workshop session.

In the event, the teachers had the choice of using "KW" without

printing or "PS". Most chose the latter, as Ina E. had already shown them "KW".

Vicky also said that at her school the kids were taught the home keys in order to improve their typing speeds.

She said that the kids found it thrilling to see their work published.

She reckoned, that for integration purposes, the computer was "real good".

CODE: MVf13

The Workshop Session.

Only two micros were set up with "PS" so there was some waiting. Some interesting comments from teachers - Vicky emphasized working together, but other teachers said they liked it better if they worked alone - "it's quieter".

One teacher who had used "KW" before, said although it couldn't be printed out, had found it valuable all the same, because the kids went round and read each others' stories.

The session worked quite well - the teachers found that it was not difficult to produce something - the program lead them through each stage. But what they produced was very much for their own ends (e.g. headed note paper, thank-you notelets, posters etc). They didn't appear to look at the program from a particularly educational point of view. They all seemed pretty self interested. The reaction was generally favourable. But one teacher didn't think it was so good because it contained a bank of drawings from which the children selected. She'd rather have them draw their own.

CODE: MVf14

Whilst I attended that workshop, CT was with Becky S. and her Logo workshop. They had a problem solving session, followed by a Logo session.

Judging from the hand outs and what CT said, an important feature of Logo is seen as its encouragement of problem solving.

The first part of the session was taken up with teachers working on problems of the sort: A is shorter than B who is taller than C etc...

Reaction: Very difficult problems - some of them - not thoroughly suitable for children.

Logo Hands-on Session:



A disk had been compiled so that various "problems" could be called up e.g., LOAD "MAZE. Then an accompanying workcard asked "can you move your turtle through the maze?".  
Reaction: again, some of the problems too difficult. Some even badly designed.

Speaking to the Principle on one occasion, he reckoned that Becky's work with Logo only "scratched the surface".

CODE: MVf15

DATE: Friday 25th April 1986

9 - 3.30.

Outline:

9 - 10.20: 3 x kindergarten - rotating groups using matching programs: Getting Ready To Read And Add.

10.20 - 10.40: Recess.

10.50 - 11.15: In classroom - Grade 6 - lead up work.

11.20 - 12 noon: "Memory castle" (Grade 6)

12.10 - 1.15: Informal chats with teachers over lunch.

1.20 - 2.20: Grade 4: "Story Book" - with Principle for part of the time.

2.40 - 3: Informal chat with Principle (John E.)

3 - 3.30: Looking at "Koala Painter" and software library.

CODE: MVf16

9 - 10.20: Kindergarten: 6 year olds. Using matching programs. "Getting Ready To Read An Add".

These programs were reinforcement of skills programs.

The Programs: (1) Matching letters - upper to lower case.

(2) Matching number on dice - number of spots - to the number:  
e.g. : matched to 2

(3) A figure made of shapes on the screen and the child decides if shapes that appear are needed in order to build the figure.

The organization:

Three groups of 6 year olds came, about 12-14 in each group.

They rotated between computers, library, dance and cookery.

They had about 20 mins in the micro-lab, approximately 10 mins on each of two programs.

The children worked individually at the programs, sitting facing the computer with earphones on.

First Group:

I wondered about and looked at what the children were doing. I watched one boy run through the matching letters program. He commented: "That was easy".

I watched some kids use the number matching program - a dice rolls, stops and a number flashes on the screen, then other numbers flash on the screen and the joy stick is used by the pupil to stop it at the right number. This program and the matching shapes one was good in that any key press worked.

CODE: MVf17

Ina E. and a teacher's aide or the class teacher attended each group. Ina E. was encouraging the children to find out for themselves what to do with each program (helped by the fact that any key pressed did the trick). The children had used these programs before, but several said they didn't remember how it worked. Ina didn't tell them, rather, let them find out for themselves - and it worked.

With the shape matching program, a shape-picture appears. Then each of the component shapes appears and other shapes, and the child decides whether or not each shape is needed as part of the drawing. Graphics: a magician who nods or shakes his head at right and wrong answers. The children responded similarly in the other groups. They were certainly not afraid of the hardware, nor I think, over enthusiastic about the technology.

I spoke to Ina in between these groups. She finds these programs are useful, they are easy to use, and although drill-and-practice, they reinforce skills being taught in the classroom. She finds that within her job, there is so much to learn - John E. mostly wants the micros used for Logo, word processing and databases - but she finds instructional programs useful because they are easy to use.

CODE: MVf18

10.50 - 12: Grade 6: "Memory Castle". (12-13 yrs)

Had a go at this program myself, after recess. Ina reckons it's a program which encourages associations to aid memory. Basically the child has to remember a series of places to go to in the castle, and at each place, a thing to do. There are three levels of difficulty:-

EASY: 3 places to go and in each something to do.

MEDIUM: 6 places to go and something to do in each.

HARD: 10 places to go and something to do in each.

Graphically, the player is represented as a knight - and it says e.g. "you are the red and green knight." You then select the difficulty level. Then, graphically, you meet the bridge to the castle and are asked "what are your colours?" (red and green). If this is answered correctly, you get into the castle. You are next shown the list of places to go and things to do - this list has to be memorised (no paper and pen allowed) e.g. "go into the kitchen and eat an apple".

#### The Lead Up:

Ina said that the class teacher didn't want to bother with the lead-up which the program documentation suggested. We went into the classroom

CODE: MVf19

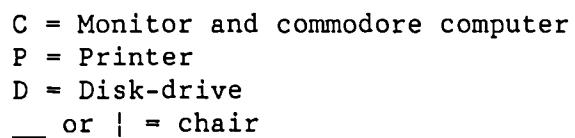
and Ina briefly explained what the program entailed. The class teacher (male) joined in too and explained that he had tried it but hadn't got very far. Ina suggested that they developed strategies to aid their memory - like taking the letter of each word and making it into a sentence or word.

After this fairly brief introduction, we all went along to the micro-lab and had a go at the program.

Most managed to recall successfully every thing at the easy level; a considerable number succeeded at the medium level, and one managed the difficult level (that that quite an achievement). I don't know how many used/developed strategies - I helped the odd one or two make sentences from the beginning letters. Most just seemed to memorise without clear strategy. All worked alone - it would have been interesting (and valuable I believe) to have seen them working in pairs.

Ina had expected the children to express frustration using the program because she guessed they'd be unable to remember. But her expectations were unfulfilled - most of the children worked at it steadily. And at the end of the session, several were reluctant to leave.

Plan of Micro-lab:



Chat with Ina: About how she'd introduced Logo:

No floor turtle, but the school does have some kind of robot - but it is not accurate - and not like Big Trak which can be given a sequence of commands. She liked the idea of Big Trak from what she'd heard.

To introduce Logo, she had started with little mazes and walnut-shell turtles which the kids direct through the maze: she had also used left-hand yellow bracelets and right-hand red ones. The kids start off with Junior Logo which uses single key commands. All the turns are 30 degrees, so there are 12 for the total trip theorem. This makes it like a clock face.

So the total turtle trip theorem is one of the things she covers in the early work. Then they move on to work-sheets about shapes - squares, triangles, pentagons etc., relating this to the total turtle trip theorem.

She uses a structured approach to Logo - she knows it is not what John E. (or Papert) would approve of, but it is what she can handle (and perhaps what the class teachers can see as being of some use).

Earlier that morning, John E. spoke to Ina - he appeared quite surprised that she had not introduced the teachers to "Print Shop". She explained - too much to do. She tried to encourage the teachers to use the computer systems in their classrooms, but she hadn't had a great

CODE: MVf22

deal of success - if any really. (Maybe it is too easy for the teachers to rely on her). One time, she said, they'd been writing stories that had been saved on disk and she had suggested that it would be a really nice idea if the teachers took the disk to their classrooms and let the children read out their stories to the rest of the class. But the teachers didn't take to this idea. She told me that some teachers were really afraid of the computer.

She "complained" that she had had really too much to do this year - familiarizing herself with all the programs. She said it was a shame that she wouldn't be here next year as she has so many ideas she would like to try out. Before she arrived, John E. was doing most of the computer work, but he found he had little time to do anything else, so he took on Ina.

I asked her if keyboard skills were taught - she said "not really" - the children start using the computer from an early age so become familiar with the keys. And they do use programs for keyboard familiarization.

CODE: MVf23

Lunchtime Informal Chats With Teachers:

Some teachers don't seem to approve of all John E. does. I

rather think he is unrealistically (to them) enthusiastic - makes it all sound easy, whereas, with something like Logo, considerable skill, on the part of the teacher is needed.

I talked with teacher Bill, about what I am doing. He says he likes "Print Shop" type programs (although he missed yesterday's in-set because he was "ill"). He reckoned there was a lot of crap about - too specific (to be useful) drill programs - no need to use a micro in class - wordcards instead. He reckoned Logo was "a good program, but can't be used forever" - his class had "done" Logo (what can he mean?).

He complained (justifiably) about the time it takes to evaluate programs - time teachers don't really have.

He said he liked programs that needed children to use logic.

Generally, I don't think he had a very favourable attitude to computers. He complained of the non-compatibility of different micros - said he'd visited other schools and seen some good stuff with Apples, but which wouldn't run on the commodores.

He said he wasn't familiar with all the stuff in the software library - there's so much.

I got the impression that he is not a teacher who would put much effort into using the computer in school.

CODE: MVf24

1.20 - 2.20: Grade 4 (10/11 year olds): "Story Book":

John E. working with the class until 2 pm (when he had to go to a meeting). The class teacher left to cope on her own.

With the "Story Book" program, children are able to write and illustrate their own stories. The program includes its own word processor for the text writing. Pictures are drawn using the joystick. Whole areas can be coloured in.

Today, the kids were working from their comic-strip-type stories.

I had a go at drawing and found it very difficult - not at all easy to use the joystick. And it was difficult to find out how to fix lines etc. The instruction manual was large! However, although I had difficulties, by and large, the children seemed to manage alright (this was about their 3rd or 4th go at using it). John E. reckoned this program let the children be "really in control of the machine".

Once again, the children worked alone at the computer.

Didn't have chance to talk to John E. - he was busy fixing kids' problems.

At 2 pm he left the teacher alone to cope.

CODE: MVf25

She was not at all happy about this, because she didn't know the program - she was unable to help the children or answer their questions. She was forced to rely on pupils who knew more than she did. Things became quite chaotic. However, John E. did put a message through saying that he'd come back and go through the saving process for the kids work.

This he did between 2.30 and 3 pm. And while he was doing this I was able to talk to him a bit.

We talked about Logo and other programs. He said he doesn't see much value in drill-and-practice programs.

About Logo: He values it, but thinks that there are problems. He is familiar with Papert's writing and he doesn't think there are any conceptual problems involved. But he does think there is a problem in that children today just won't explore. And this he blames on the divorce rate. About 50% of the children he works with come from broken homes; each parent sees the child and tries to spoil it in order for it to like mother/father best. Because of this, children just haven't the patience/concentration to explore and get their own rewards from the activity - they need to know "what's the point". And so, for this reason, he has resorted to using workcards/sheets to some extent.

CODE: MVf26

I asked him about policy and he said that he didn't really have anything written - the only time he had written a policy document was when he was trying for a technology grant to buy software. But that was more a jumble of other's policies used to get the grant (which he got - \$8,000 for new software!!).

He commented on Synder's work which he reckoned just scratched the surface.

He then suggested I look through the school software library. He chose to show me briefly "Koala Painter" which uses a stylus and board, which, when touched, transfers to the screen - used for drawing - quite complicated facilities available - colouring-in, enlarging... He then left, and I had a brief look at the school's software library:

SUNBURST (mostly good according to John E.)

Algernon

Challenge Math

The Incredible Laboratory

The Factory  
Getting Ready To Read And Add  
The King's Rule  
Memory Castle

CODE: MVf27

Trading Post  
The Pond  
The Right Turn  
Survival Math  
Teasers By Tobbs  
Word Detective

John. E. has catalogued all the programs - giving a few basic facts about each. In all, there were nine large files with about 20 disk in each (each disk may have several programs). So there were approximately  $20 \times 9 = 180$  disks costing usually between \$30 - \$50 each (that's a lot of cash).

CODE: MVf28

Comments On Monte Vista:

Experience at the school raises many questions:

The school has:

-lots of cash	-teachers' aides
-large software library	-in-set work
-a micro-lab (no shortage of hardware	
-a thoughtful and enthusiastic Principle	
-a part-time micro-teacher.	

But my impressions are that many teachers aren't enthusiastic about micros. Micros are rarely used in the normal classrooms. And, although good work is going on, not as much as I might have expected.

All the above factors help tremendously - having all that hardware (and software) does overcome so many practical difficulties, but it doesn't seem to be "the answer".

Using micros requires effort and time. The micros at MV were not integrated into the curriculum.

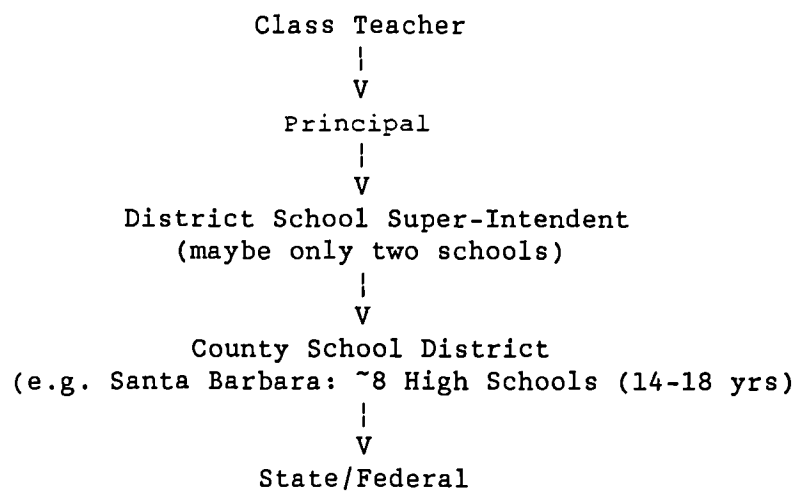
I don't think that more was going on at this school than perhaps the Head at Ben Mercy manages with 3 micros. But, at MV, more children (and younger children) get more hands-on experience.

I can't really put my finger on the problem - but it seems to lie with the teachers.



CODE: MVf29

Note on the Hierarchy:



MONTE VISTA:  
MICRO-TEACHER'S  
LIST OF "USEFUL"  
PROGRAMS.

MATH-

Bumble Games  
Gertrude's Puzzles  
Math Blaster  
Fay That Math Woman  
The King's Rule  
Sweet Shop-K/1  
Gabbit Factory-K/1  
Counting-K/1

READING/LANG./SPELLING-

Alphabet Zoo  
Spelling Zoo -early elementary; timer off  
ABC Time- Kindergarten  
Magic Spells  
Kermit's Electronic Storymaker  
Kidwriter  
Storybook  
Word Spinner  
Pre-reading-K/1  
Cave of the Word Wizard  
Tiger Tales- early elementary

ADVENTURE/Problem Solving-

Double Feature Mystery I  
Adventure Double Feature II  
Swiss Family Robinson  
Dragon's Keep  
Troll's Tale

OTHER (Problem-Solving)

Memory Castle

Algernon

Moptown Parade

Odd One Out- best to create own lessons- VERY EASY TO DO!!!

The Incredible Laboratory

TYPING-

Keyboard Cadet

Paus (coming soon!)

KINDERGARTEN & EARLY ELEMENTARY-

Sweet Shop

Grabit Factory

Counting

Pre-reading

Shapes & Patterns-Group It

Easy Match Easy Count

Ernie's Magic Shapes

Matchmaker

Alphabet Zoo

Easy Match

Getting Ready

Kindercomp #4,5,6

Coco Notes

Colorasaurus

Facemaker

Kermit's Electronic Storymaker

Tiger Tales

Another way to make constructions in Logo is with the coordinate system. The turtle is located in his world by an x-coordinate (horizontal) and a y-coordinate (vertical). These commands can be used to move the turtle by changing his x-coordinate and y-coordinate:

**Terrapin/Krell Logo**

SETXY  
SETX  
SETY

**Apple Logo**

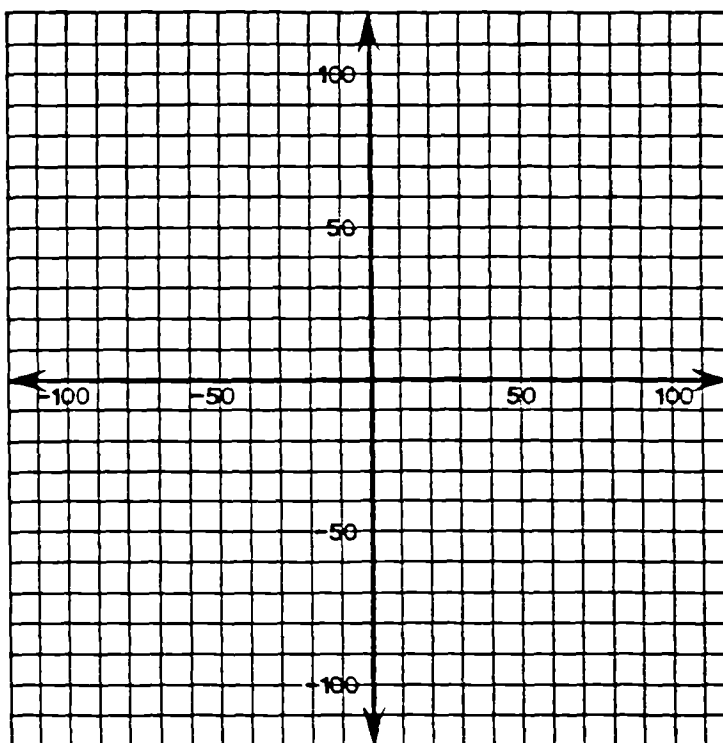
SETPOS [     ]  
SETX  
SETY

Use this series of commands to explore. Record the turtle's position on the "turtle world grid" after each command.

**Commands**

```
PU SETXY ( - 100 ) ( - 50 ) PD
SETX ( - 70 )
SETXY ( - 30 ) 0
SETXY ( - 70 ) 50
SETXY ( - 100 ) 0
SETXY ( - 70 ) 50
SETXY 70 50
SETXY 100 0
PU SETXY ( - 30 ) 50 PD
SETY 100
SETX 30
SETY 50
SETX 70
SETXY 30 0
SETX ( - 30 )
PU SETX 30 PD
SETXY 70 ( - 50 )
SETX 100
```

**Turtle's World**



NAME \_\_\_\_\_

DATE \_\_\_\_\_

PLOT THE FOLLOWING POINTS AND FIND THE HIDDEN PRIZE. USE THE EDITOR IN CASE YOU MAKE A MISTAKE. LOGO COMMANDS NEED TO BE INSERTED AT THE INDICATED SPACES.

X	Y
FULLSCREEN	
PC 4 BG 11 PU	

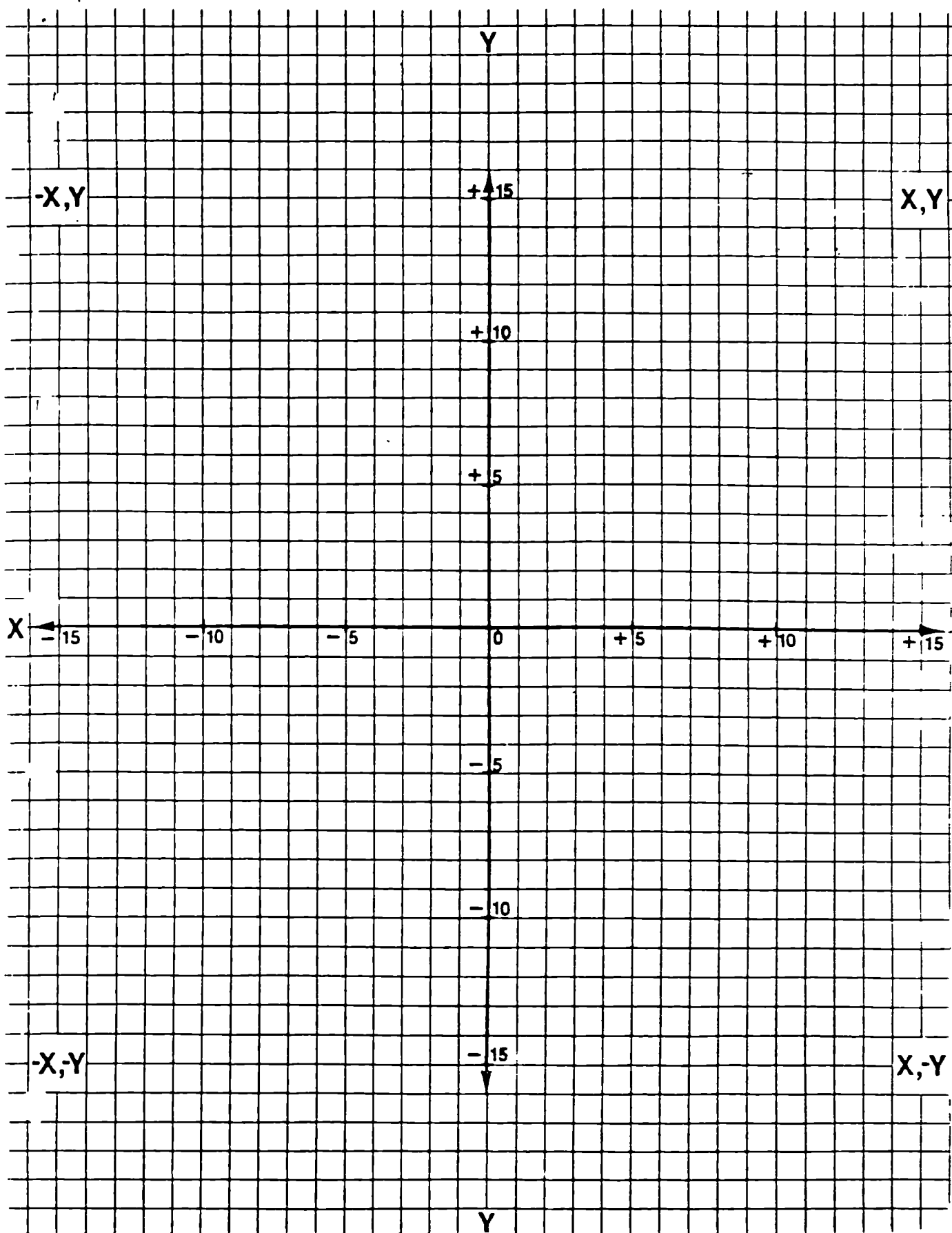
X	Y
0	20
PD	
1	26
5	32
30	40
41	52
70	52
76	40
90	38
100	35
100	24
92	19
82	16
77	12
72	12
67	16
82	16
34	16
30	12
25	12
20	16
34	16
10	16
0	20
PU	

CONTINUES

X	Y
0	10
PD	PC 0
100	10
PU	
1	26
PD	PC 1
5	32
5	26
1	26
PU	
96	27
PD	PC 2
96	33
100	33
100	27
96	27
PU	
31	38
PD	PC 1
42	50
67	50
71	38
31	38
HT	

WHAT IS THE PRIZE?

---



USING THE COORDINATE PLANE TO DRAW AN OBJECT  
CODE IN THE FOLLOWING PROCEDURES USING THE EDITOR AND GET A SURPRISE

```

TO E
HOME CS C
HT PU SETXY 60 ( - 20 ) PD PC 8
SETXY 90 10
SETXY 130 10
SETXY 130 50
SETXY 60 50
SETXY 60 120
SETXY ( - 90 ) 120
SETXY ( - 90 ) 70
SETXY ( - 80 ) 70
SETXY ( - 80 ) 60
SETXY ( - 70 ) 60
SETXY ( - 70 ) 50
SETXY ( - 60 ) 50
SETXY ( - 60 ) 20
SETXY ( - 80 ) 20
SETXY ( - 80 ) 10
SETXY ( - 90 ) 10
SETXY ( - 90 ) 0
PU SETXY ( - 90 ) ( - 20 )
PD SETXY ( - 70 ) 10
SETXY ( - 30 ) 10
SETXY ( - 10 ) ( - 20 )
PU SETXY ( - 90 ) 0
PD SETXY ( - 80.3 ) 0
PU SETXY ( - 20.3 ) 0 PD
SETXY 80 0
PU SETXY 0 110 PD
SETXY 0 40
SETXY 10 40
SETXY 10 30
SETXY 20 30
SETXY 20 20
SETXY 50 20
SETXY 50 110
SETXY 0 110
W W1
WIN WIN1
R
S HT
END

TO W
PU SETXY ( - 65 ) ( - 20 ) PD
PC 7 REPEAT 360 / 30 [FD 10 RT 30]
END

TO W1
PU SETXY 85 ( - 20 ) PD
PC 7 REPEAT 360 / 30 [FD 10 RT 30]
END

TO WIN
FULLSCREEN HT BG 0 PC 1 PU
SETXY ( - 60 ) 60 PD
SETXY ( - 40 ) 60
SETXY ( - 40 ) 100
SETXY ( - 60 ) 100
SETXY ( - 60 ) 60
END

TO WIN1
PU SETXY ( - 30 ) 50 PD
SETXY ( - 10 ) 50
SETXY ( - 10 ) 100
SETXY ( - 30 ) 100
SETXY ( - 30 ) 50
END

TO C
PU SETXY 120 50 PD PC 3
SETXY 120 60
SETXY 110 60
SETXY 110 50
END

TO R
PU SETXY ( - 160 ) ( - 37 ) PD PC 11
SETXY 160 ( - 37 )
END

TO S
PU SETXY 20 40 PD PC 5
SETXY 40 70
PU SETXY 33 55 PD
SETXY 50 40
END

```

USING THE COORDINATE PLANE TO DRAW AN OBJECT  
CODE IN THE FOLLOWING PROCEDURES USING THE EDITOR AND GET A SURPRISE

```
TO CET
HOME CS
FULLSCREEN BG 14 PC 0 HT
PU
SETXY 100 ( - 60 )
PD
SETXY 104 ( - 56 )
SETXY 108 ( - 52 )
SETXY 112 ( - 48 )
SETXY 116 ( - 40 )
SETXY 116 ( - 28 )
SETXY 112 ( - 16 )
SETXY 104 ( - 8 )
SETXY 92 0
SETXY 76 4
SETXY 60 4
SETXY 32 0
SETXY 12 ( - 8 )
SETXY 0 ( - 12 )
SETXY ( - 28 ) ( - 28 )
SETXY ( - 40 ) ( - 40 )
SETXY ( - 52 ) ( - 48 )
SETXY ( - 62 ) ( - 52 )
SETXY ( - 72 ) ( - 48 )
SETXY ( - 80 ) ( - 36 )
SETXY ( - 80 ) ( - 22 )
SETXY ( - 76 ) ( - 12 )
SETXY ( - 68 ) ( - 4 )
SETXY ( - 52 ) 4
SETXY ( - 40 ) 12
SETXY ( - 32 ) 24
SETXY ( - 32 ) 28
SETXY ( - 52 ) 16
SETXY ( - 72 ) 28
SETXY ( - 72 ) 24
SETXY ( - 68 ) 12
SETXY ( - 64 ) 8
SETXY ( - 76 ) 0
SETXY ( - 82 ) ( - 8 )
SETXY ( - 92 ) ( - 28 )
SETXY ( - 92 ) ( - 40 )
SETXY ( - 88 ) ( - 60 )
E
S
WA
Y
END
```

TO W

REPEAT 5[SETH 80 FD 60 SETH 100 FD 60] SETH 80 FD 50

```
TO Y
HT PU SETXY ( - 70 ) 80 PD PC 7
REPEAT 360 / 15 [FD 20 BK 20 RT 15]
END
```

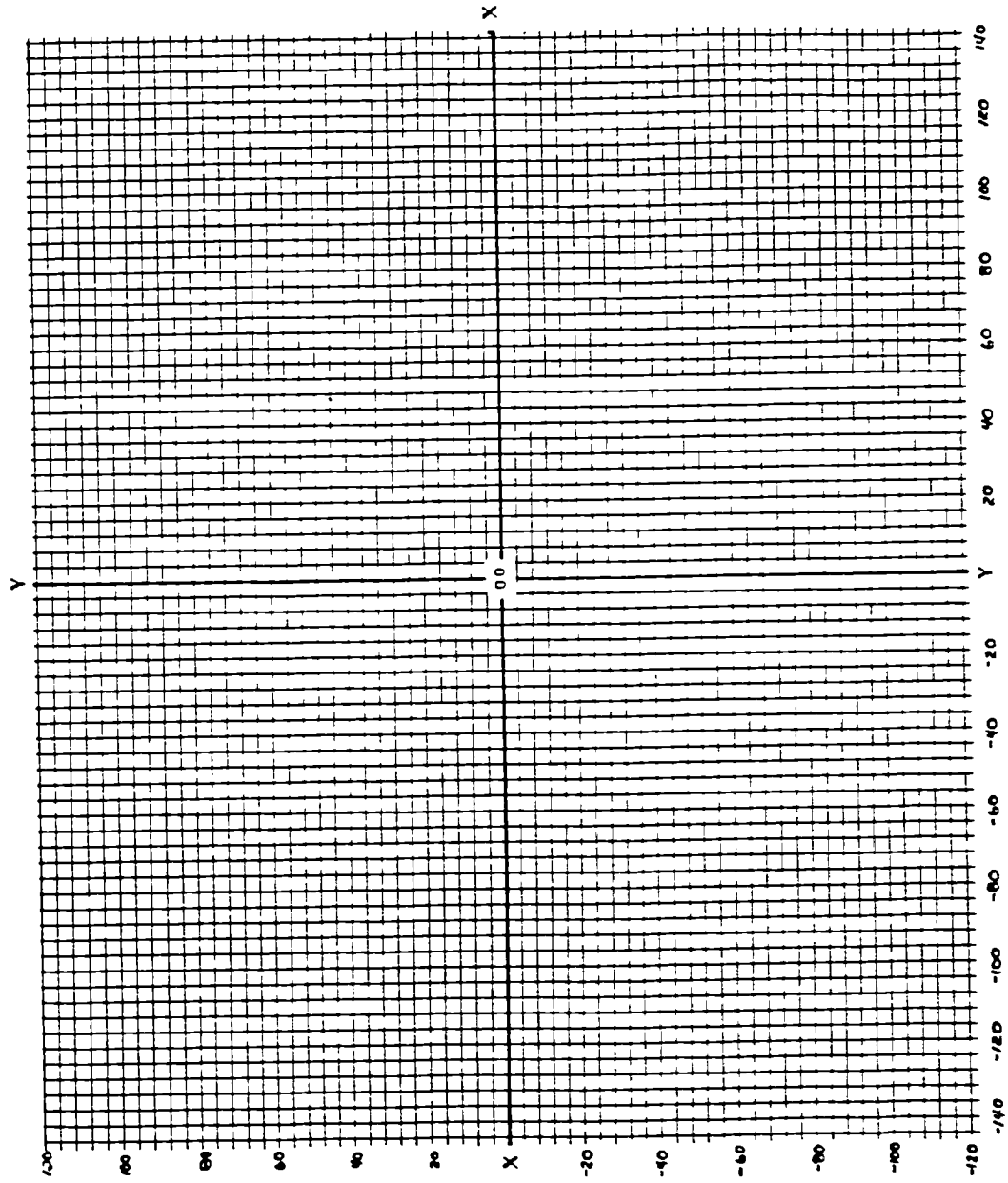
```
TO E
PU SETXY 64 ( - 40 ) PC 2 PD STAMPCHAR "I
END
```

```
TO S
PU SETXY 64 4 PD PC 1
SETXY 64 36
SETXY 60 52
SETXY 52 60
SETXY 40 72
SETXY 28 78
PU SETXY 66 4 PD
SETXY 66 52
PU SETXY 68 4 PD
SETXY 68 36
SETXY 72 52
SETXY 80 60
SETXY 92 72
SETXY 108 78
END
```

```
TO WA
PU SETXY ( - 160 ) ( - 70 ) PD HT
PC 1 W
PU SETXY ( - 160 ) ( - 80 ) PD
PC 6 W
PU SETXY ( - 160 ) ( - 90 ) PD
PC 1 W
PU SETXY ( - 160 ) ( - 100 ) PD
PC 6 W
PU SETXY ( - 160 ) ( - 110 ) PD
PC 1 W
PU SETXY ( - 160 ) ( - 120 ) PD
PC 6 W
END
```



PE#21



LA PATERA

CODE: LPq1

DATE: Tuesday 29th April 1986.

SCHOOL: La Patera, Santa Barbara. Elementary school.

All aged children use the computers (kindergarten to 6th grade)

Micro-lab for 2 years - 20 Apple IIs + disk-drives and printers.

Uses: information handling, word processing, simulations/  
adventure programs (after school), Logo.

Mostly children use the computers alone.

CODE: LPq2

Number on roll: ~500

Micro-lab: 20 micros + colour monitors + disk-drives + 9 printers  
(some colour printers).

Micro-lab timetabled.

CODE: LPf1

DATE: Tuesday 29th April 1986.

Arrived at 10.20 - had arranged over the phone to be there at  
10.30. Went along to the office and Becky S. was already there.  
Her first class began at 10.30.

Some details about the school:  
~500 pupils on roll - including some learning disabled children,  
and there are also some bilingual classes.

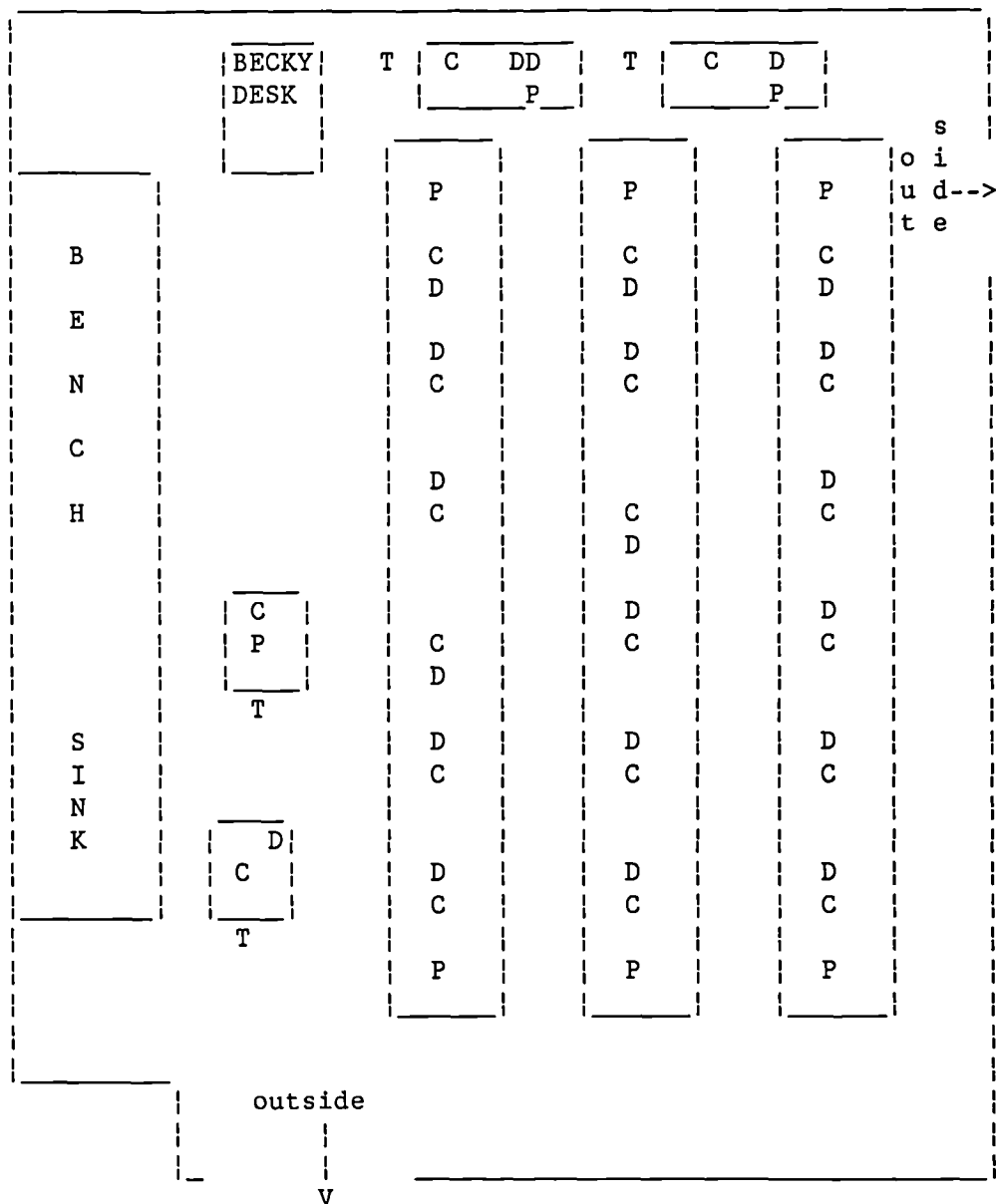
The school has a micro-lab housing 20 Apple IIs, colour  
monitors, disk-drives and several printers - some which are  
colour. All these are housed in a self-contained block.

Having met Becky S., we went along to the micro-lab. Although  
her classes didn't begin until 10.30, there were already some top  
graders there doing some word processing. Apparently they are  
able to do this during the first two hours of the day.

Basically, what I did today was sit in on the lessons. Little  
opportunity to talk with Becky as she was so "busy".

CODE: LPf2

Micro-Lab Plan:



C = Apple II Micro + colour monitor

D = Disk-drive

P = Printer

T = Trolley

(The school has had the micro-lab for two years).

CODE: LPf3

Rough Guide to Becky's Yearly Plan:

First Term: Kindergarten to 6th Grade  
Word processing - "Fr Ed Writer"

Second Term: Older Grades: Logo  
Younger Grades: "Delta Draw" and problem solving  
programs.

Third Term: Databases.

This outline shouldn't be thought of as clear cut - e.g. the database work hasn't begun yet; word processing kept up through out the year - not taught beyond first term, rather children use it when they need to.

Other programs used: "Paint Shop", "Dazzle Draw".

Rough Guide To This Week's Plan:  
(Becky S. works approx 10.30 - 3pm each day).

Tuesday: "Dazzle Draw": kindergarten, 1st, 2nd and 3rd graders

Wednesday: Beginning database work.

Thursday: As Tuesday.

Friday: Pupil (student) teaching pupil (student).

CODE: LPf4

Outline of Today in Micro-lab:

8.30 - 10.30: Upper grades word processing - not taught, rather working on their own stories and other written work.

10.30 - 10.50: "Dazzle Draw": 6 year olds - half a class (11 pupils): bilingual.

10.55 - 11.15: "Dazzle Draw": 1st and 2nd graders (7-8 year olds) - half a class (10 pupils).

11.15 - 11.35: "Dazzle Draw": 1st and 2nd graders - other half of class (10 pupils).

11.35 - noon: "Mentally retarded" group: 9-13 year olds (~10 pupils). Working on "Dazzle Draw" - usually they work as "teachers" helping younger pupils.

Pretty much the same in the afternoon. Didn't stay for the afternoon "repeat". Apparently Becky only has a 15 min lunch break between classes.

With all the four groups I watched this morning, Becky repeated

what she said - varying it slightly to reflect the age of the pupils. Some of the groups came with their class teacher, others did not.

Basically, each time, Becky began by seating all the children around her on the floor. All the children had used "DD" before

CODE: LPf5

so she introduced the work by saying that the older children (3rd and 4th graders) were illustrating nursery rhymes, that will be made into a book for the kindergarten children. "Wouldn't it be nice if you could draw some pictures to go with the nursery rhymes too?". She then read out a few nursery rhymes, showed some colour pictures that the older children had produced (using "DD") and drew something quickly on the screen to remind them of how to use the program. She introduced the first group to "spray paint" too.

The children spent the rest of the time drawing on the screen. Concentration seemed generally long lasting. Screens were often cleared though. One picture from the second group was saved.

About the Program "Dazzle Draw":

Most obvious feature is the mouse. When the mouse is moved about, it directs an arrow/paintbrush (or whatever) about the screen. The children can go to TOOLS and select: paintbrush, spray paint, flood fill, zoom... And, e.g., with paint brush, different sizes of brush can be selected, and different colours of paint... If the children go to GOODIES, several things can be done (which I didn't observe), including clear picture.

CODE: LPf6

One unfortunate thing about this program is that below "clear picture" in GOODIES, is a command which ends the program. It is very easy for young children to go down just a little too far and accidentally end the program - as happened several times - although Becky did emphasize how careful the children should be not to do this. When this does happen, the program has to be loaded again.

During the time I was in the micro-lab, I had a good look around the walls. There was evidence of: word processing ("Fr Ed Writer"), Logo (evidence of REPEAT and subprocedures) and "Print Shop".

The stages of word processing were displayed on the wall:-  
Pre-Writing (means thinking about what will be written)  
Writing  
Editing (corrected by the teacher)  
Re-Writing  
Publishing.

CODE LPf7

Managed to speak briefly with Becky - found out the year timetable. Talked about Logo - she claimed to have been working with Logo for nine years (can this be true? CT doubts this as Logo for micros only came in 1982) and with children for 5 years. Anyway, she reckons that children have problems with Logo if they don't have problem solving abilities.

Comment:

If micro-lad and micro-teacher then why not science-lab and science-teacher in elementary schools? Implications for curriculum integration.

CODE: LPf8

DATE: Wednesday 30th April 1986.

11 - 3 pm. (Arrival time as arranged).

Outline Of The Day:

11 - 11.30: 5th and 6th graders: 25 pupils: Database work: 10-15 min introductory talk followed by questions on work sheet.

11.30 - 12: 5th and 6th graders: 28 pupils: Database work as above.

12 - 12.30: Lunch Break.

12.30 - 12.50: Voluntary: small group of individuals working on Logo, "Print Shop" and word processing.

12.50 - 1.15: Maths tests on micro.

1.15 - 1.30: Setting up for the afternoon.

1.30 - 2: 4th and 5th graders: 26 pupils: Database work as above.

2 - 2.30: 5th and 6th graders: Database work as above.

2.30 - 3: 5th and 6th graders: 22 pupils: database work as above.

CODE: LPf9

This was the pupils' second session of database work. Basically the aim, at this stage, is to get the pupils used to handling the database.

Five classes were observed, and the lesson was virtually the same each time. In other words, Becky did the same thing 5 times over.

#### The Database Lesson:

Each group had 30 mins, but 10-15 mins was taken up with introductory talk. The class would all pile in with their teacher and sit in a group on the floor. Then Becky roughly did the following:

- (1) She showed them some Logo print-outs of what pupils in the class had done.
- (2) She asked for volunteers to do some word processing work (before 10.30 am or during Lunch-time) on the nursery rhyme book for the kindergarten, and an Mother's Day recipe book.
- (3) She talked about the database work and the questions on the worksheet.

#### About The Database:

The database being used was PFS (see accompanying sheet at the end of these field notes). In it was a database about the States of America, including the following information: name of state, region, capital, motto, flower, tree, product, resources.

CODE: LPf10

It had been compiled at Bakersfield by a group of teachers including Becky.

The pupils had to explore the data on the States in order to answer the questions on the worksheets. They usually worked in pairs.

For the last couple of minutes at the end of the session, some of the questions are gone through.

Some of the classes are bilingual - Mexican Spanish. The bilingual pupils tend to be less able. This creates problems - at the end of each session some of the class had answered all the questions whilst others had only done one or two. What was generally decided was that those who didn't finish would finish off next time and those who had would move on to something else.

(I'm not sure this was particularly fair as the lesson wasn't really long enough - only 15 mins at the computer). Becky said that there are children who have difficulties problem solving and she doesn't like to hold the more able ones back, so for the database work and the Logo work, she splits up the class - the less able merely do "problem solving" activities. This however, she does find conflicts with her ideas about equality - more about that later.

CODE: LPf11

About Becky Snyder:

She works at LP school 10.30 to 3ish each day (8.30 - 10.30 I believe, is spent at other schools where she does some kind of consultancy work). She does a lot of in-service work too (as at MV that day). She said something about not being in school last Wednesday because she was "with the teachers".

Her background is (surprisingly) philosophy, which she taught at High school level, until she felt like a change and did a course at a University with micros (where she was introduced to Logo). After that, she got into elementary school teaching.

Integration and Equality:

I asked her about integration and whether having a micro-lab and a computer teacher caused problems. But she responded by saying that at least with this method it was possible to say that all children leaving that school had had similar educational experiences. Without a computer teacher, it would be left in the hands of individual teachers - some would be keen and do some very good work whereas others would not have anything to do with micros.

CODE: LPf12

However, she says that integration is an aim: there are micro set-ups on trolleys which can be taken into classrooms where follow up work can take place. And she also thought that in about 2 or 3 years each classroom would have a micro too.

I asked how typical LP and MV schools were, with their micro-labs. She said "not very". MV gets its money from parents and grants; LP gets it because it is a bilingual school.

Becky has been in the job for three years, but there was not much happening at the school before she arrived. Now she is thinking of moving on, but she sees no-one to replace her. I asked if the teachers could handle it on their own - she said that as it was, she tries to involve teachers, but it is very difficult. A few of the more interested ones will stay after school and try out different things (one did when I left today).

I think Becky is perhaps more interested in the brighter pupils (e.g. she splits the group up and the less able don't do Logo). She went on about problem solving and said that some children find it real

CODE: LPf13

difficult - especially the younger ones and the bilingual ones. They need a lot of hand holding and this holds the others back.



The aim of the database work they were doing is familiarization with the package (the learning of commands). Those who successfully master this will begin a database project about themselves:-

name, age, birthday, favourite music, favourite sport etc...

Becky says the exercise is very self-motivating, although the questionnaire is not composed by the kids.

After this, another database on fitness is compiled:

height, weight, fitness grades (e.g. high jump etc..)

Then they can ask questions of the type: is height related to high jump ability?

I asked her what she does in future years when pupils have done some word processing, Logo work and databases; does she continue it? She said that there is no problem because they only spend a third of a year on each; it is surprising how much they forget; different problems can be set and they can get deeper into the activities.

CODE LPf14

12.50 - 1.15: ~17 pupils doing maths tests on the micro - most doing division problems (from easy ones to hard long divisions). The computers just being used to drill pupils through maths problems - and not very successfully either - the program definately had its faults - RETURN pressed at the wrong moment - answer wrong. But Becky said she's not too happy with this work so may drop it next year.

CODE: LPf15

DATE: Thursday 1st May.

Went along to nearby school (Hollister) on the off chance of seeing the Principle (apparently the school has recently got more equipment and, says Becky, doesn't know what to do with it). But he was out of town and will be tomorrow too.

CODE: LPf16

DATE: Friday 2nd May 1986.

Arrived at 10.30 and went along to micro-lab. The morning lessons involved some of the less-able "teaching" and helping 3rd and 4th graders with "Dazzle Draw".

There took place two 30 minute lessons, with two groups of 3rd and 4th graders using "DD" and two different lots of 4 less able pupils.

10.30 -11 am: Andy, Mat, Tim and Maria.

11 3rd and 4th graders, their teacher, Becky and teacher's aide. "DD" and the mouse.

All the work these 3rd and 4th grader have done with "DD" has been "taught" by the less able children.

The lesson begins with Becky leading each of the 4 less able children through a reminder of what "DD" can do. So basically, with help, the less able demonstrate "DD".

After this, Becky says that today's lesson will give them a chance to practice drawings to go along with the nursery rhyme book. A bit of chat about this follows. Then the class starts using "DD". If they have problems, one of the less able helps them out. The less able children wonder

CODE: LPf17

about, helping others.

Becky has to remind them to explain what they do, offer encouragement, not be bossy, i.e. act as real teachers.

Nothing much of any significance is drawn, rather, the children explore "DD". However one girl (who was Hebrew) writes her name.

11 - 11.30 am: Corrie, Hosay, Treasa and Anne Marie.

3rd and 4th Graders: "Dazzle Draw". 14 pupils.

Once again, chat about nursery rhyme book, followed by demonstration of "DD" by less able "teachers".

Repeat of previous lesson - the less able wonder around the micro-lab and help others.

Talked to Becky about this work: she finds it very rewarding, and so do the less able kids - it's rare for them to be put in a teaching role. But it is difficult - these children have some very different problems. Becky left after this session.

CODE: LPf18

Other Information:

"Delta Draw": pre-Logo work, and used with the ones who don't get on so well with Logo.

Principle: Brian M. - his first year at the school.

Becky's plans for the future:

She would like to see more integration - micros in each class, and used in the library for looking up books - micro use through out the school. But she did stress that micros were not the most important thing in the school.

She talked about her work: about the problem of it all being so new - she has to go in blind and feel her way as there hasn't been anyone before really. She has found from her experience that some things work and some things don't - things that work = the writing-word processing; the less able "teachers". She will

do more with these next year. She feels that some schools are perhaps moving in the wrong direction - things have to be taken slowly - it takes time

CODE: LPf19

to find out what works and what doesn't.

Other Information:

Becky S. and Ina E. get paid by the hour, so they're not full time members of the teaching staff.

Also, the teachers' aides get paid by the hour, but can only work 15 hours per week. Becky said she'd never manage without her aide. Her aide does photocopying, loading disks and other mundane, routine tasks. Today, her aide was tidying up some bugs on the States database program.

These teachers are extremely fortunate to have aides - particularly as they aren't voluntary. If they were, I could foresee problems in that it would be difficult to "order them about" if they didn't get paid for what they did.

At the end of these lessons, some kids came in to get their disks - they were doing some computer work in their classroom - I had seen a computer set-up on a trolley being wheeled out earlier. So there is some computer work going on outside the micro-lab!

CODE: LPf20

Some General Comments:

I don't really think that the micros were being used to enhance the curriculum and make improvements the educational process, rather, they seemed to to largely treated as another "subject".

Most important realization: hardware alone is not the answer. Putting micros into the classroom doesn't result in educational improvement.

LA PATERA: 12. DATABASE  
WORK

PFS: FILE

PFS:FILE FUNCTION MENU

- |                |                  |
|----------------|------------------|
| 1. DESIGN FILE | 4. SEARCH/UPDATE |
| 2. ADD         | 5. PRINT         |
| 3. COPY        | 6. REMOVE        |
- SELECTION NUMBER:  
FILE NAME:

CONTROL KEYS

CONTROL (CTRL)	Use with other keys to give special instructions to File
CTRL C	Tells File to begin or continue a function
ESC	Cancels the current function and returns to the main menu
RETURN	Moves the cursor to the beginning of the next line
TAB	Moves the cursor to the next item
OPEN APPLE TAB	Moves the cursor to the previous data item
CTRL N	Next page
CTRL P	Previous page
DELETE	Delete to the left of cursor

RETRIEVE SPECS

Find exactly Texas	Texas
Ignore anything before Texas	.. Texas
Ignore anything after Texas	Texas..
Ignore anything before or after Texas	..Texas..
Ignore anything after "T"	T..
Find anything except blank items	..
Find blank items	/..
Find anything except for Texas	/Texas
Find Texas followed by any character	Texas@
Find exactly the number 10	=10
Find any number greater than 10	>10
Find any number less than 10	<10
Find any number between 10 and 15	=10..15

PRINT SPECS

X - Print this data item  
+ - Print this data item and the next one on the same line  
S - Sort by this item

GETTING STARTED

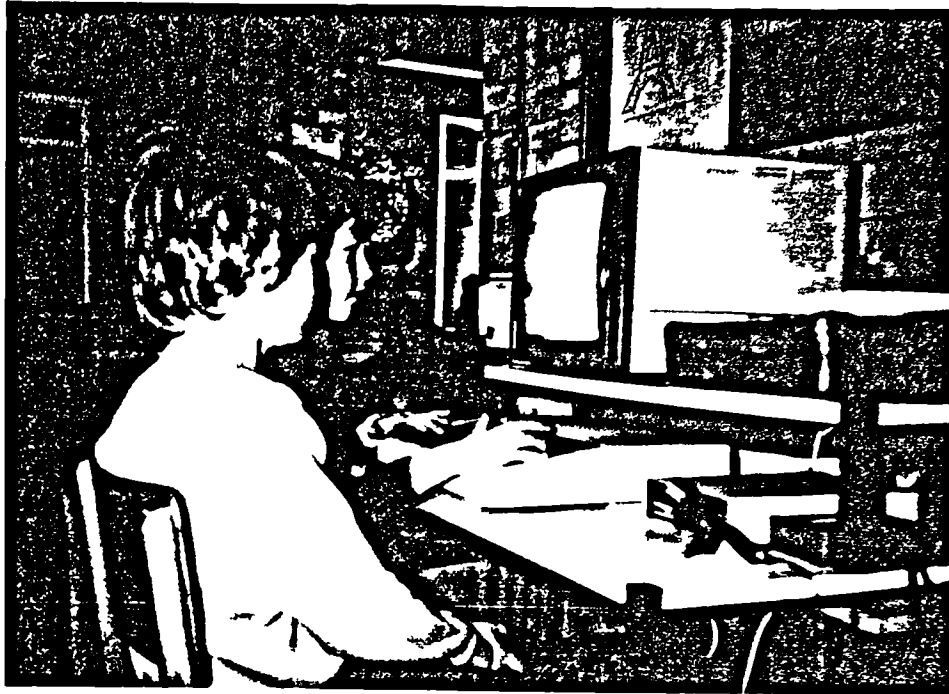
1. You will need a blank disk to store information on.
2. Never work with the original data disk!
3. FILE can be used with a single disk drive, but you can't use the copy or the change design functions.
4. File can be used with either 40 or 80 - column display mode, but they can't be interfaced.

1. In which U.S. Region is Maine found in?
2. What is the capital of Florida?
3. How many states are in the North Central Region?  
Name them.
4. How many states grow cotton? List them. What  
region grows the most cotton? Why?
5. Which state has the smallest population? The largest?
6. Complete the chart below for the Pacific Region.  
Then add the land areas to find the total area  
of the Pacific Region.

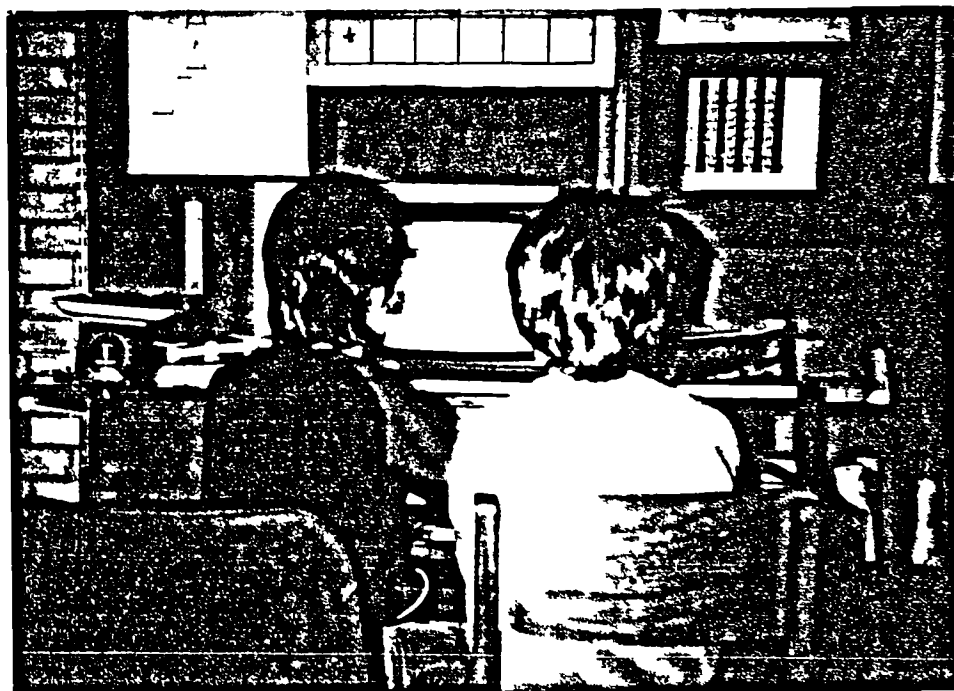
State Name	Land Area (sq. mi.)
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
Total Land Area _____	

7. You are going on a trip and you want to see the  
following attractions - What States will you be visiting?  
Statue of Liberty                      Fort Knox  
John Kennedy Space Center              Jamestown

## USING THE MICROCOMPUTER AT HEADLAND SCHOOL



Using "Number Chaser"





"Brick Up"





## USING COMPUTERS AT BEN MERCY SCHOOL



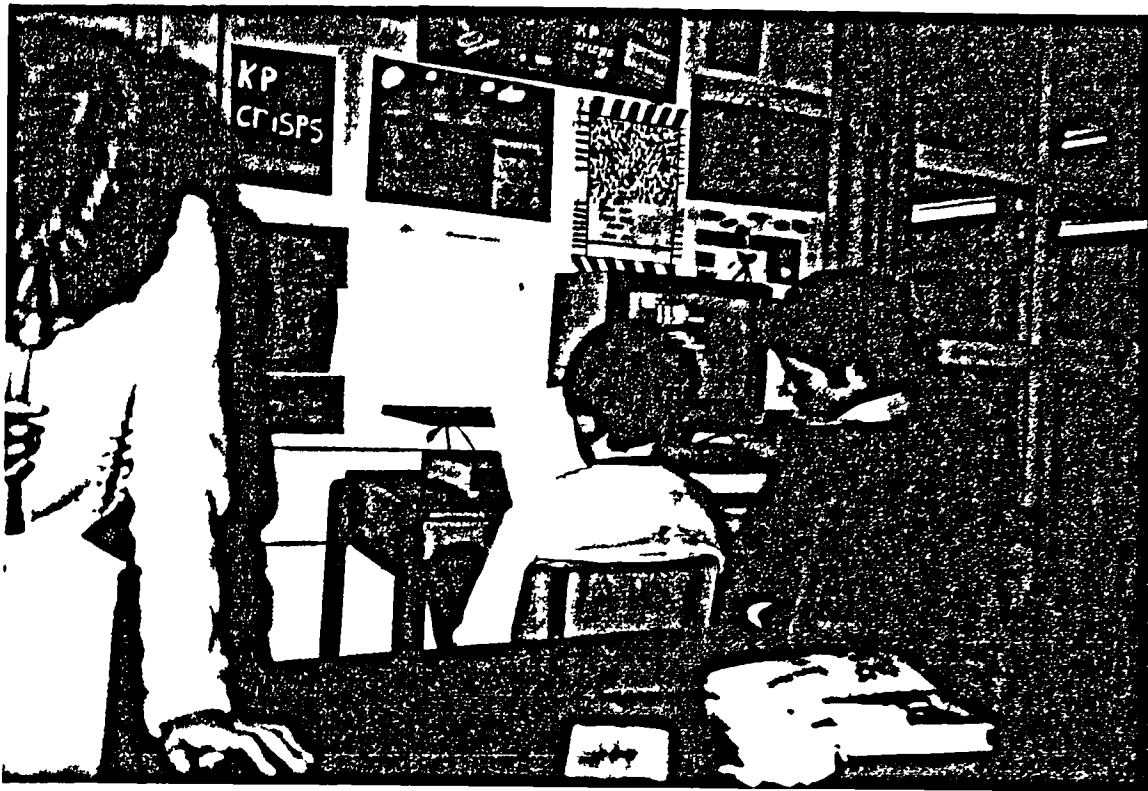
"Number Painter"





Collecting data for the "Quest" files in the third year Junior class





Recording data for the "Quest" files in the third year Junior class

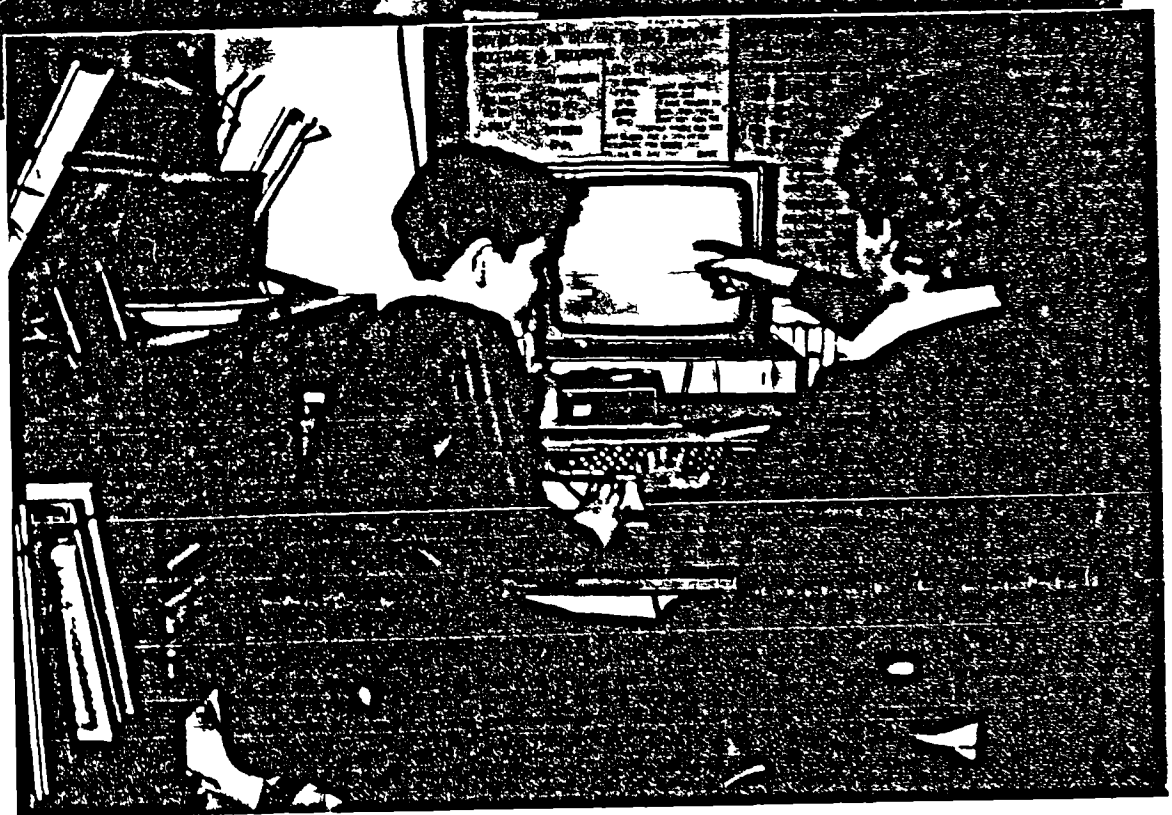


# LOGO AT LONGSIGHT SCHOOL





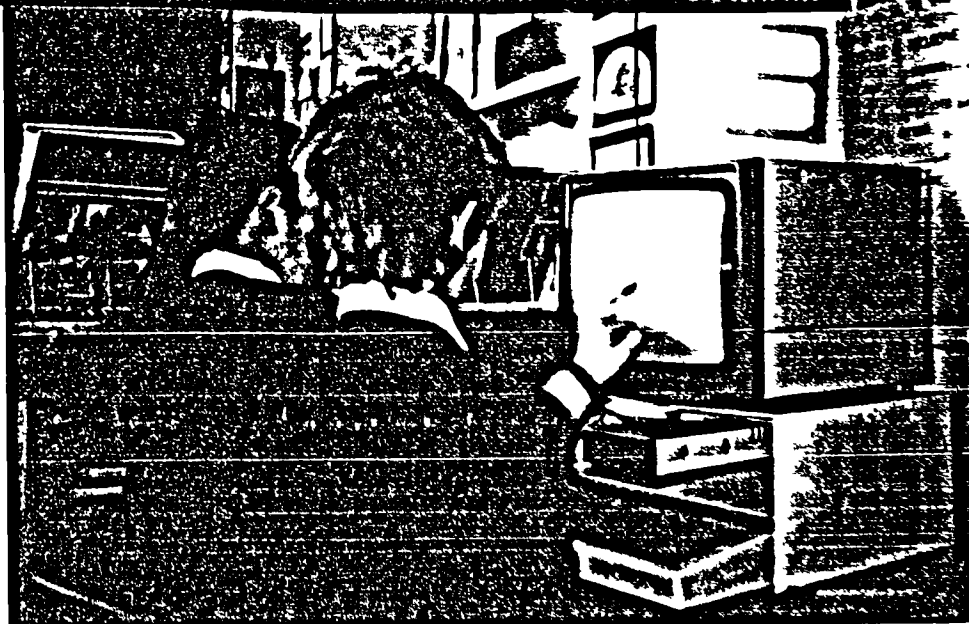
George and Norman at their Logo work







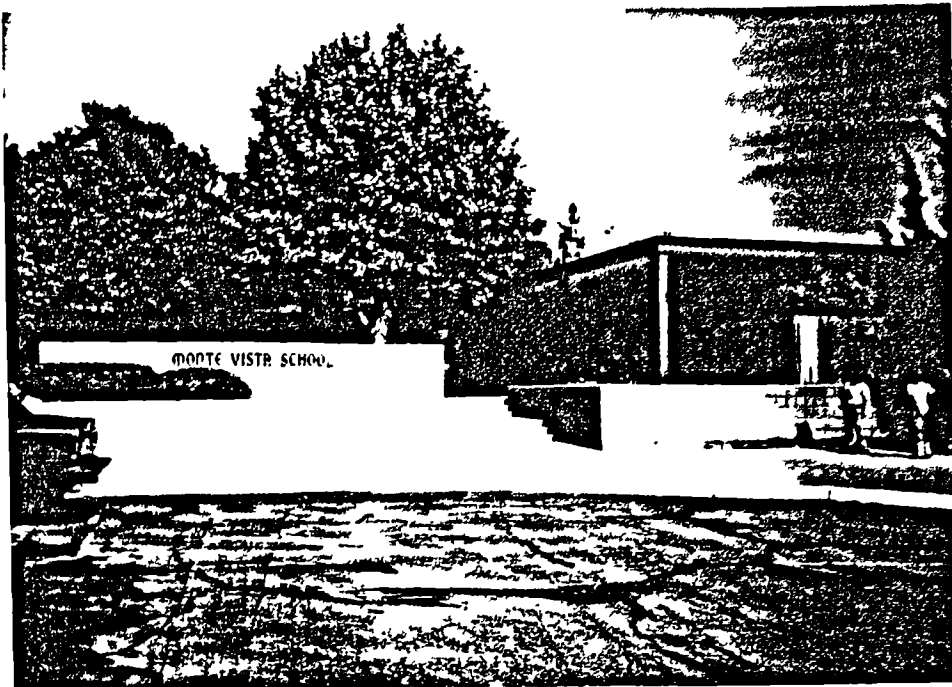
George and Norman  
at work on their  
SUB



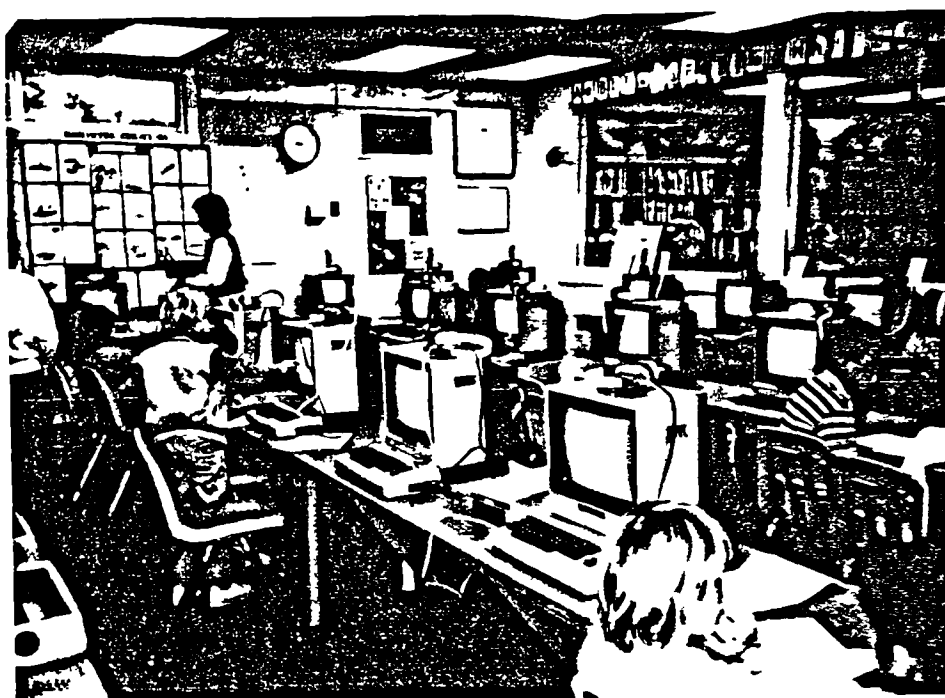


Early days of Logo at  
Longsight, with the third  
year juniors





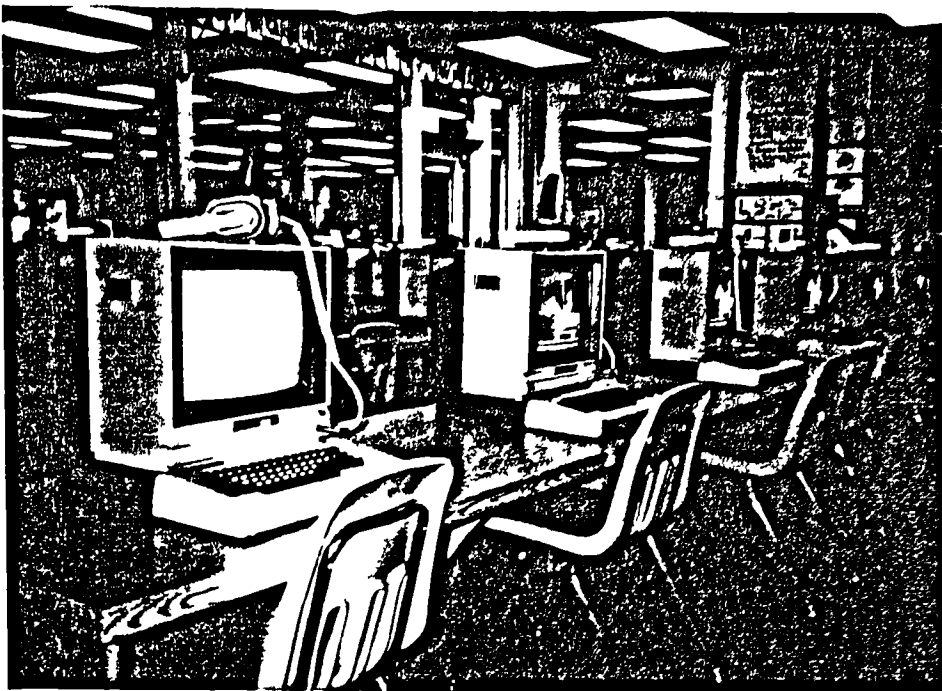
MONTE VISTA SCHOOL



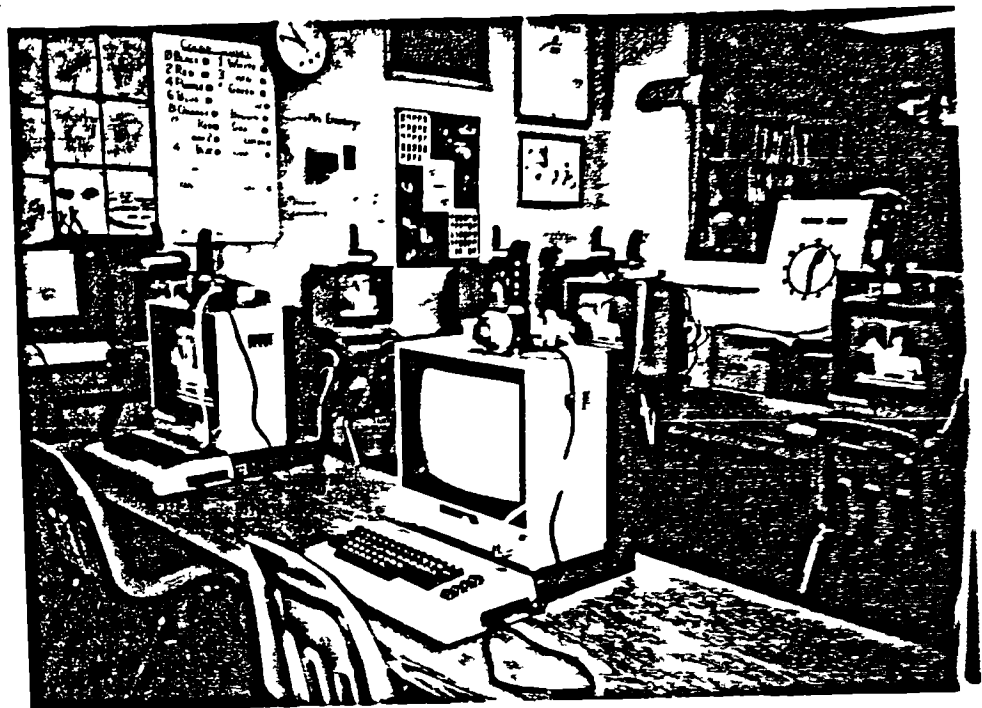
In the micro-lab

Using the  
"Haunted House"  
adventure program



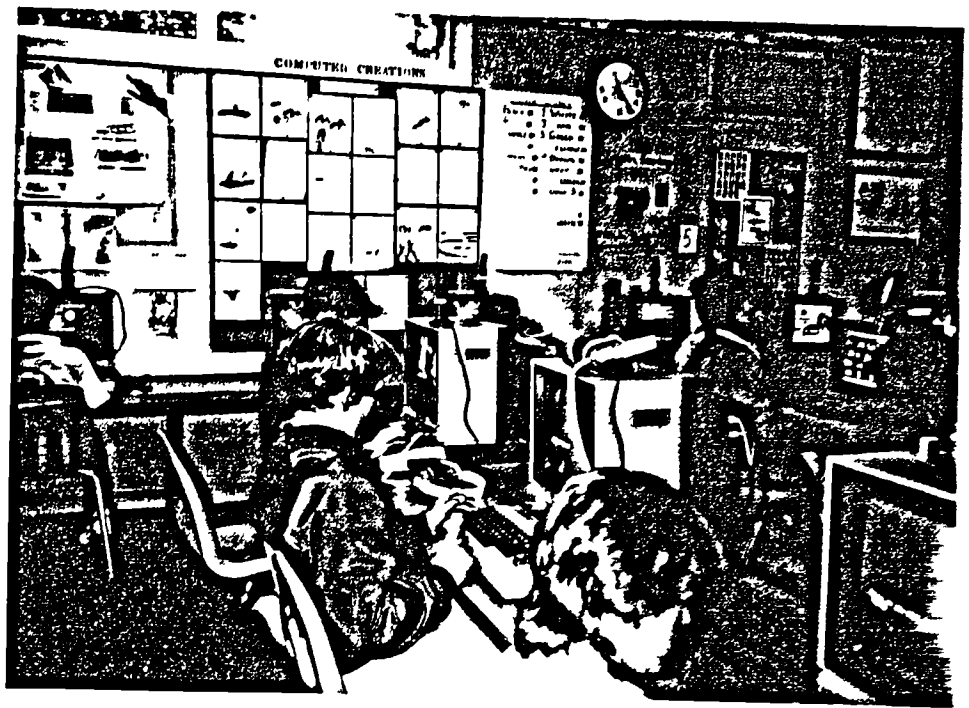


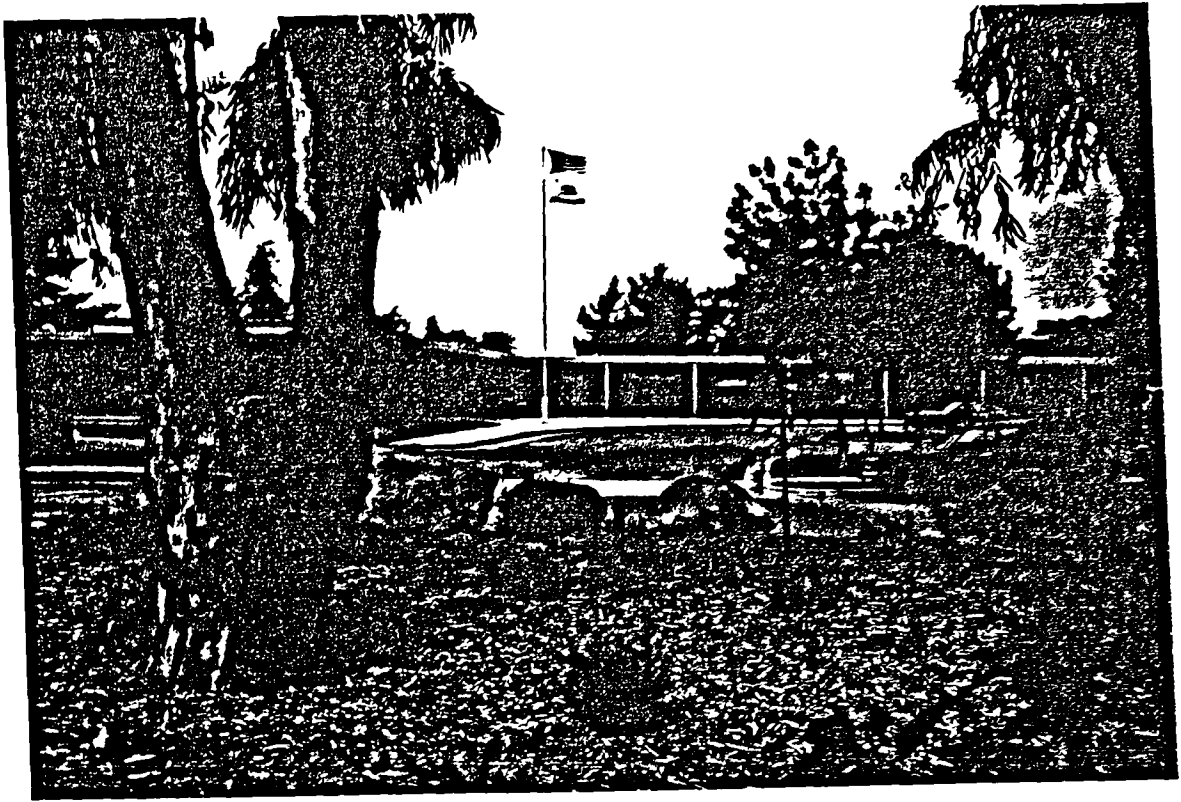
All ready for  
"Memory Castle"



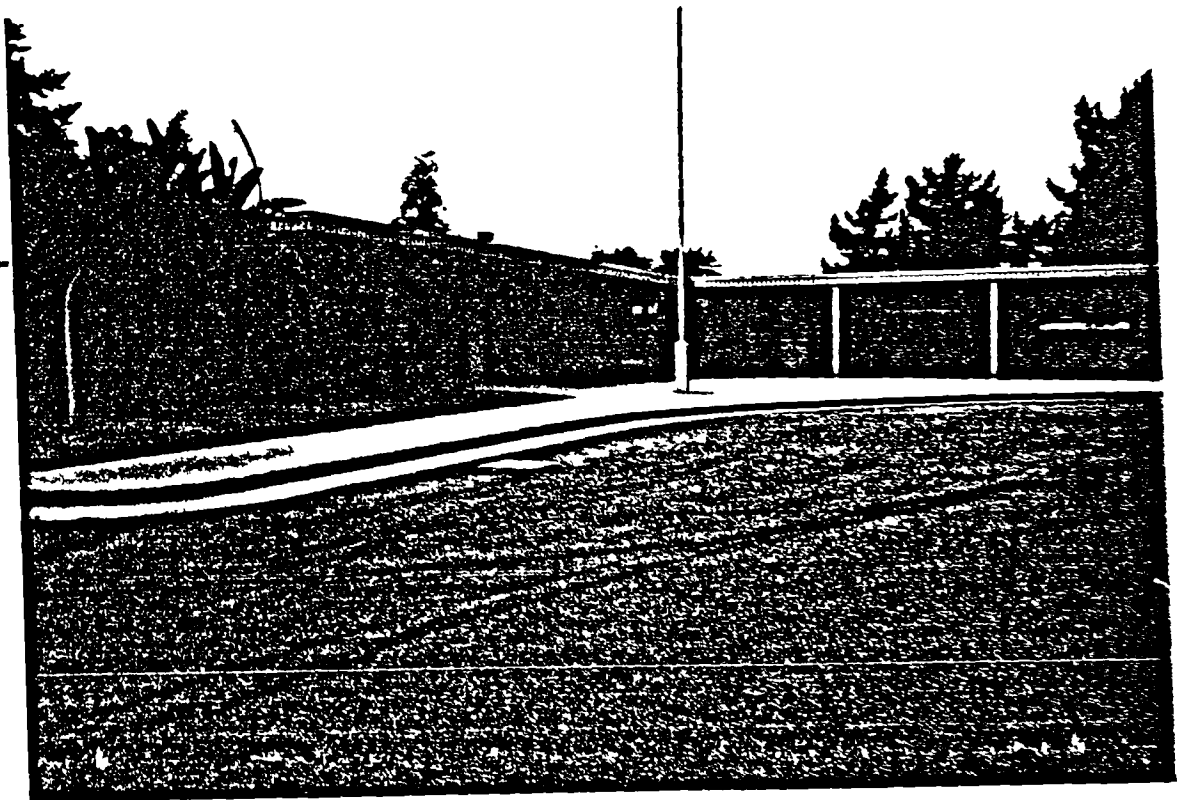
Using  
"Memory Castle"

Using  
"Memory Castle"

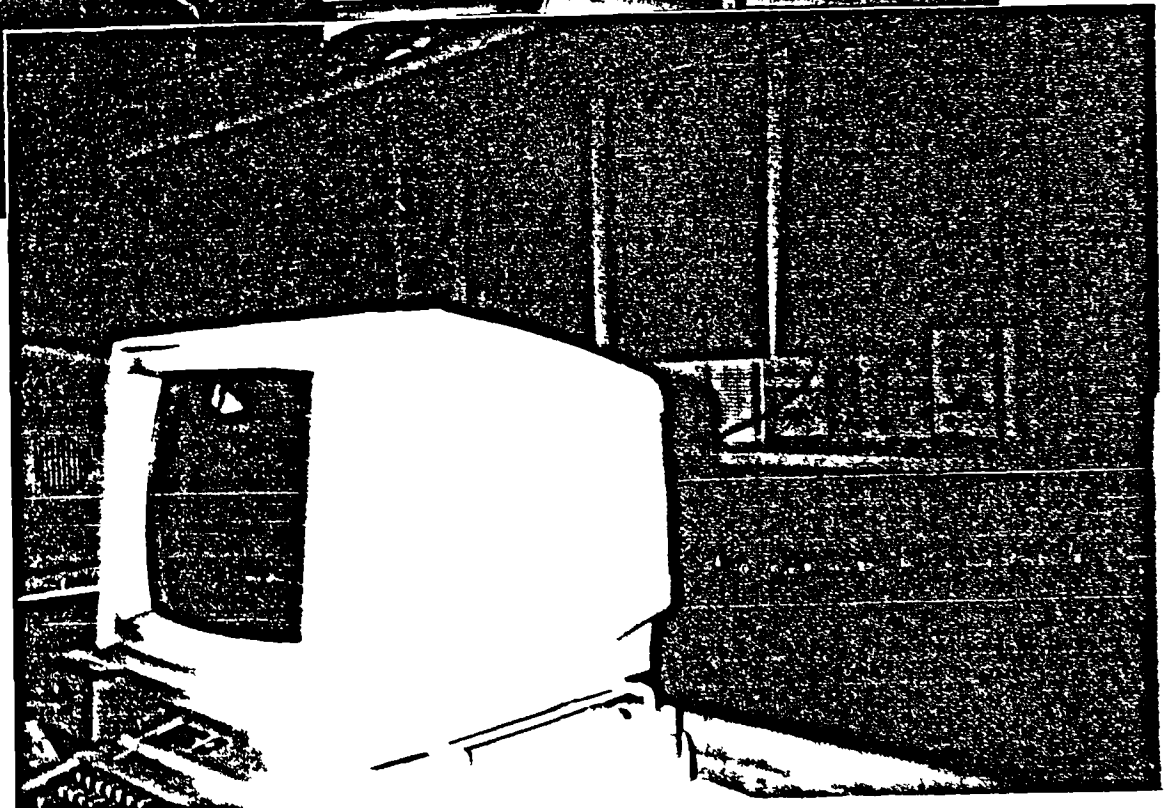
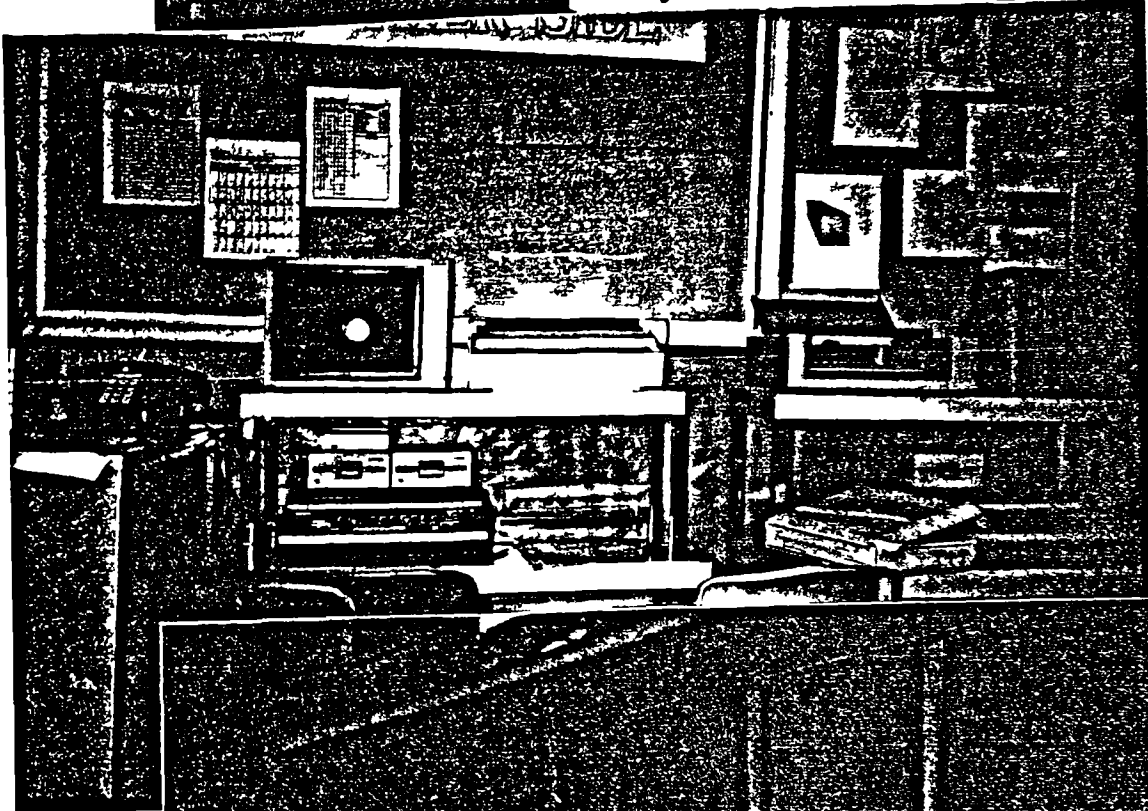


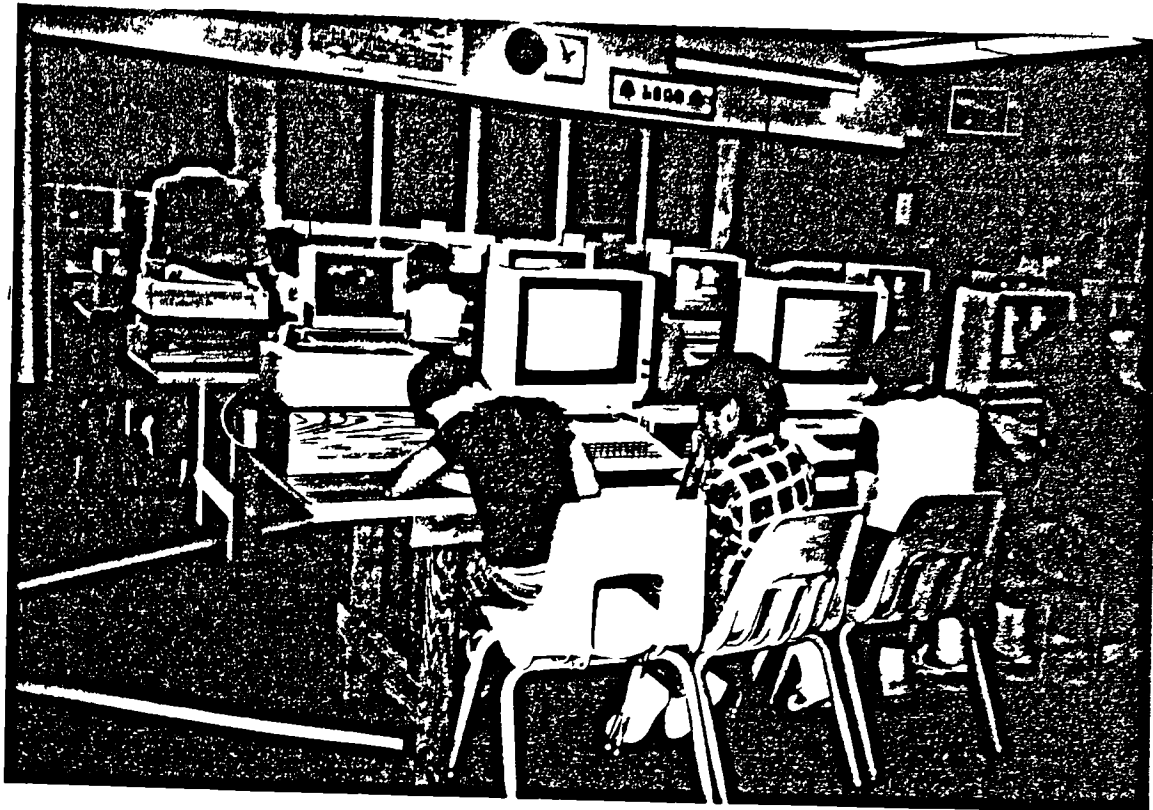


LA PATERA SCHOOL



Displays  
in the  
micro-lab



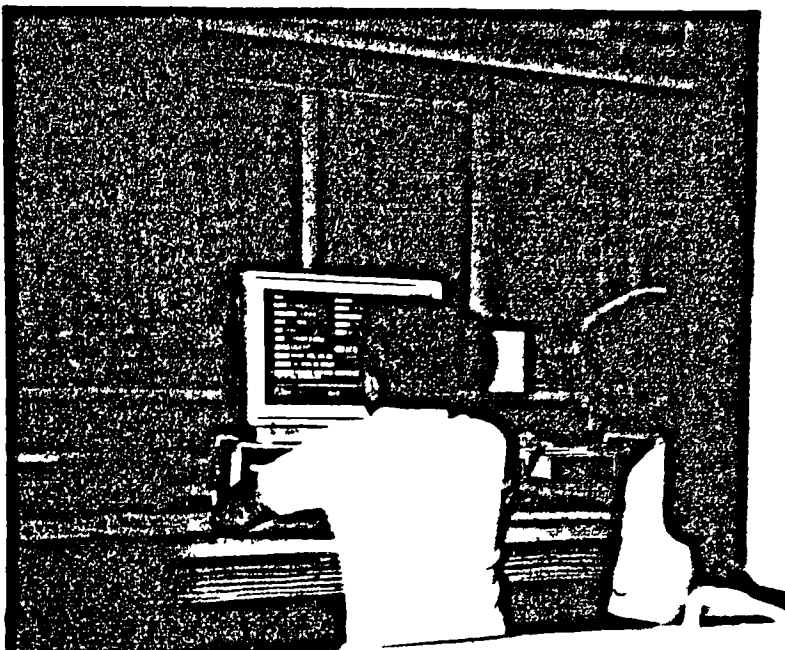


Using a database





Using a database



"Dazzle  
Draw"-ing

