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")

Case Record: INDEX

After Longsight Fieldnotes:- ‗
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Examples of Logo Session Worksheets No.s 11, 12, 14, 15 & 16 (19 pages)
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Fieldnotes Made In Californian Schools.

Monte Vista Case Record.

Monte Vista's Micro-teacher's List Of Useful Programs (2 pages)
Example of Logo Worksheet Used At Monte Vista (6 pages)

La Patera Case Record.
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Photograph Dossier (19 pages) located at end of Case Record.
H(Photos)1-3; B(Photos)1-3; L(Photos)1-5; MV(Photos)1-3;
LP(Photos)1-5.

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 untaken 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, recurision.

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, similations 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 similation 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

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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 a 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.

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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 form 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 enthusiasic
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.

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 + nusery 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 an 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.

18

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 rehersals
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
Swansea	4
Peterhead	0
Winchester	0
Exeter	6
Inverness	7
Manchester	7
Edinburgh	0
	25%

Escape button was pressed, so I had to re-load the program - with plenty of help - they seemed to know how to load (CHAIN "MAP").

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.

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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 thing 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 there 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.

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 (mispelt)
(4) bright	(4) wet	(4) bright
(5) cow	(5) donkey (mispelt)	(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 then 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 sware 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 luke warm 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 then 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 then 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   The bell rings - I ask if they'd
(5) donkey   like another go - they definately
(6) grey   do. But the class teacher comes and
(7) ash   tells them they can continue after
(8) blue   Break.
(9) starling
 TOTAL: 9/9

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) brigth (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

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(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 ususal 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 advise 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 Prgram 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 looses speed and the
vehicle behind catches up a bit.
You win when you get the vehicle to the top of the screen. You
loose 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 extention of the work.

So says the booklet that goes with the program.

I didn't find it necesary 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, incurrs 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 stcok 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 x 683 ~= 7 x 700 ~= 4900 or, more

likely, 7 x 112 ~= 7 x 100 ~= 700

I notice that K (group 7) did do something similar: e.g.
7 x 68 : she did 7 x 6 = 42 and added the 0 ~= 420.
This generally worked okay, but not when the number was not
rounded up i.e. a closer estimate of 7 x 68 is 7 x 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: "Lettergrag". 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             |=|
|=|                                                                 |=|
|=|                                                                 |=|
|=|-----------------------------------------------------------------|=|
|=|-----------------------------------------------------------------|=|
|=|                                                                 |=|
|=|                                              O                  |=|
|=|                                             /I\                 |=|
 ----------------------------------------------/ \-------------------
```

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 conections - 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.J1 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.
J1.

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.Jl 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 dictonary 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

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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 + dictonary)
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 arithmatic 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.

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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.
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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:	R:
3 mins 16 secs	2 mins 24 secs
25 units	29 units
1 unit of fuel	1 unit of fuel
10 sums asked	14 sums asked
8 correct	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.

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

A's Comments:
"That canoes one'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 shcool.

It is very clear form 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 definately 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 █████████

Prifathro/*Headteacher* :   Mr. R.H. █████

Cadeirydd y Llywodraethwyr/   Mr. G.W.S. █████████
Chairman of the Governors :   ████████ Farm, ██████████.

Ysgol ████████, ███████████████, Môn, Gwynedd ████████
Ffôn/Tel: ████████████

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 ████████████,   ████████ School,
████████████,   ████████,
Gwynedd,   Gwynedd,
████████.   ████████.

Telephone ████

Mawrth/*March* 1984

GYDA CHYFARCHION Y PRIFATHRO
WITH THE HEADMASTER'S COMPLIMENTS

Current Info Book is similar in most respects.

HD OC/n PO

1. THE SCHOOL

   Ysgol ██████ 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 daily.~~

   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 2~~	4-5 "	"	Reception
	5-6 "	"	Infants 1 } UNIT 1 & 2
~~Unit 3~~	6-7 "	"	Infants 2
	7-8 "	"	Standard 1 } UNIT 3
	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.

HDoclrP1   H DoclnP1

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.

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.

YSGOL ▓▓▓▓▓▓▓▓▓▓

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.

+ voc1

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.

62

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 then 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 form 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 generallly 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" <u>could</u> 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
<u>really</u>): 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 <u>(Ni, Ch, De, and Sa)</u>.
(I shall make some judgements and say they were "very nice
middle class girls - bright too"). Head gave them a litle 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 occasion 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

70

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 lke 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 monastry
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
Mathemagical" 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 ago 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 lession. 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 sharped 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 is 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 abbrevations 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
forseen 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 laborous 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 posible 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:-


```
9-|                    |--------|
  |                    |        |
8-|                    |        |        |-------|
  |                    |        |        |       |
7-|                    |        |        |       |
  |                    |        |        |       |
6-|                    |        |        |       |
  |                    |        |        |       |
5-|                    |        |        |       |
  |                    |        |        |       |
4-|                    |        |-------|        |
  |                    |        |       |        |
3-|                    |        |       |        |-------|
  |                    |        |       |        |       |
2-|                    |        |       |        |       |
  |                    |        |       |        |       |
1-|-------|-------|    |        |       |        |       |
  |       |       |    |        |       |        |       |
  |_____|_____|____|_____|_____|_____|_____|_
  | 19.00 | 19.30 | 20.00 | 20.30 | 21.00 | 21.30 |
```
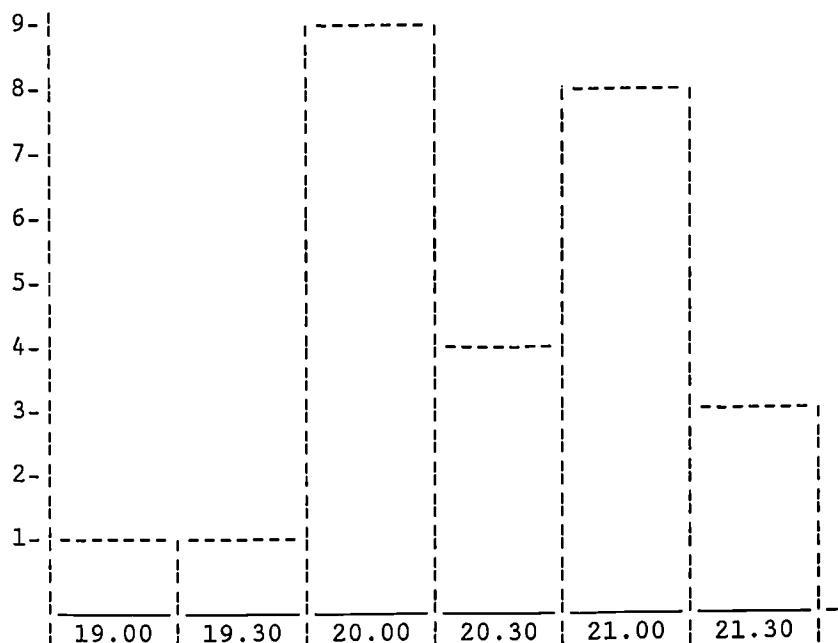
They were asked to comment on the graph.
Owen's Theory: Those who go to bed early do better in class than
those who go to bed late and are tired.
The Head was quite impressed with this theory. It is followed up

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.
JUMBO1: 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 <u>help</u> 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.

96

"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 thoughful 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".

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               |-| +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 1s 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 Mysincla (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 Mysincla

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 pp106-120):
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 <u>will</u> 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 <u>been</u> 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 <u>wouldn't</u> 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 <u>not</u> suit me might go down a bomb with Mr.J4, sort of thing. So unless it's blatently 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 <u>lousy</u> some very attractive programs have been - so (pause) I dont 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 <u>perfect</u> 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 decifering 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 contibuting 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 definitately - 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: Bil1

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: Bil2

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

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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: Bi15

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: Bi16

ADB: Is there any likelihood with being a Centre school or anying
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: Bi17

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
periferals - 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: Bi18

routine of everyday running a school, the mind boggles....

ADB: And realistically what problemns 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 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

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

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).

BDocPros
Ben Mercy
Document
Prospectus.

BEN MERCY SCHOOL
PROSPECTUS

BEN MERCY

Y S G O L ████████ ████

Cyfeiriad/Address: ████████████,Ynys Môn/Anglesey,LL74 8SG

Rhif ffôn/Telephone no.: ████████████████

Prifathro/Headmaster: ████████BA,CBiol.,MIBiol.

Cadeirydd y Llywodraethwyr/
Chairman of Governors: ████████.PhD.

Ysgol gynradd sirol yw'r ysgol,syad yn derbyn disgyblion
llawn-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 Llanfair Mathafarn Eithaf,a ddaeth
yn enwog fel bardd clasurol yn ystod yddeunawfed 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 ████████ ████████ ████,one
time curate in the parish of ████████ ████████████,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 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

STAFF YR YSGOL - SCHOOL STAFF

Prifathro/Headmaster: Mr ▬▬▬▬.BA,CBiol,MIBiol.

Dirprwy Brifathro: Mr J.▬▬▬.FLCM,HonTCL,LLCM.

Yr Adran Iau/Junior Dept.:   Mr W.B.▬▬ (Cysylltwr Mathemateg/
                                       Mathematics Co-ordinator,
                             Mrs A.E.▬▬(Cysvlltwr Iaith/
                                       Language Co-ordinator)
                             Mr H. ▬▬

                             Miss M.▬▬

                             Miss M.G.▬▬.BA.

Adran y Babanod/Infants Dept:

                             Mrs B.▬▬
                             Mrs B.▬▬
                             Mrs M.Ll.▬▬

                             Mrs B.▬▬.SRN,SCM.(Gweinyddes
                                          Feithrin/Nursery Assistant)

LLYWODRAETHWYR YR YSGOL - SCHOOL GOVERNORS

Cadeirydd/Chairman: Cyng/Cllr.J.B.▬▬.MSc.PhD.
Is-gadeirydd/Vice-Chairman: Parch/Rev.C.S.▬▬.BD.

Cynrychiolwyr y Rhieni/
    Parent Representatives: Mrs A.▬▬(Ysgrifenyddes/Secretary)
                             Mr R.▬▬.BDS

Cynrychiolydd Staff/
    Staff Representative: Mr J.▬▬.FLCM.HonTCL,LLCM.

Cynrychiolydd yr Awdurdod
Addysg/LEA Representative: Dr O.C.▬▬.MB,ChB.

Cynrychiolwyr y Cyngor
Cymuned/Community Council
Representatives: Mr Iorwerth ▬▬
                             Mr William ▬▬

* * * *

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 ar 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 schoolthwre 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 inb the school is based on two schemes,namely
Mousematics in the Infants department and Nuffield Maths in the
Junior deprtment. 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 compoment 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 clssroom 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 Lurriculum(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 as_ 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 chid 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 informwd 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 func-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:-
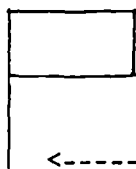
<------- START AND FINISH HERE.

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:-

125
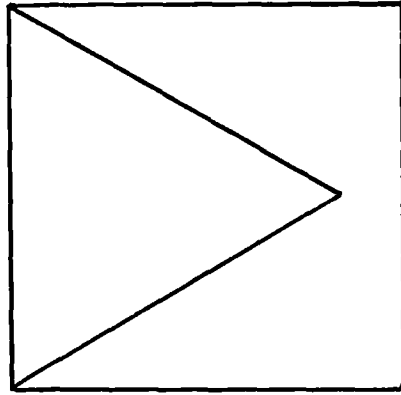
The girls first tactic was to resort to direct-drive. They ran
into problems when they first tried to direct-drive the roof
shape on the square. They could not get the angles right:-
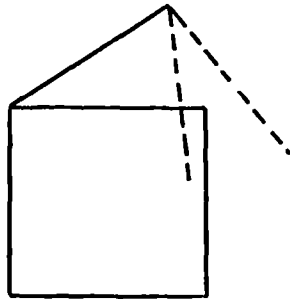
They, at this point, abandoned the REPEAT 3 [FD 100 RT 120]. I
helped them and they changed the RT 120 to LT 120 which gave them
this:-
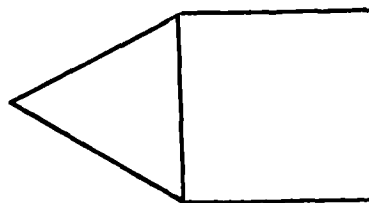
CODE: Lf13

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 in 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 accidently 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.

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 cicle:
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:-

131

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/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/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:-

A   B
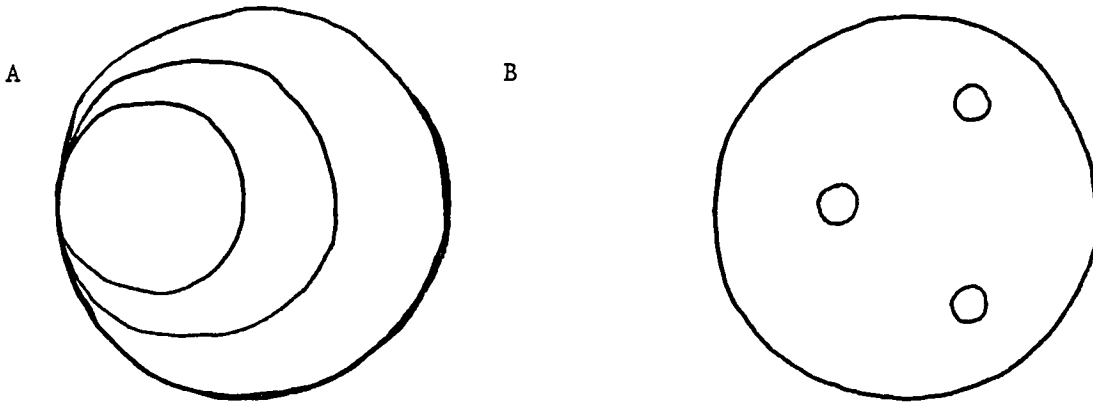
(TAPE No.2:Side A)

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 defeatest. 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 CIRLCE.

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 X 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... Oooooh...

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 _hex_agon...

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: Bagsy 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 <u>why</u>this is?

L: 360... no

E: 36 x 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) Arrrhh, 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... <u>Everlyn</u>.

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.

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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
```
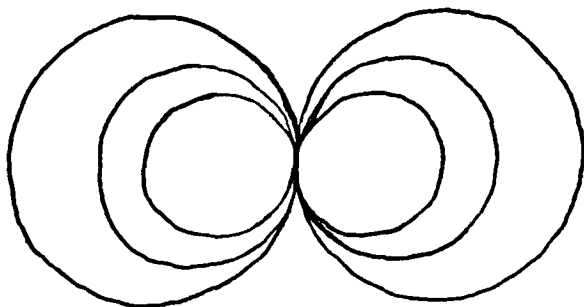
The turning was found with no trouble. They save EYES (G.
thought about editing RIHA to draw this, but I suggested that
they write another procedure for it and then if they want just
one "eye" they'll have it there).

```
--------------------------------------------------------------------
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 form 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 rehersing 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 progams 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 noisey 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]

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I ask why the second one works too - they say because 90 x 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:-
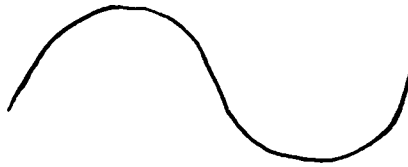
They see that it starts with a semi circle. They type:-

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

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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 where 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 x
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 x 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 the 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 noisey).

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 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, form 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 x 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.

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[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.

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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: Weeeeee...!

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)

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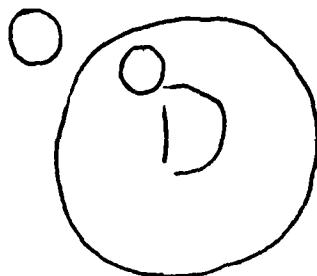
They laugh at the results. G. gets concerned though, and peeps through his fingers - they are both pessimistic after editing and nearly always say "I hope it works, but I doubt it will". Two or three more edits gives them:
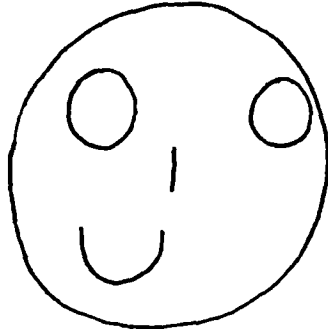
I direct their editing a little but the initiative comes from them.

CODE: Lf57

Finally, they succeed in de-bugging it and it draws:
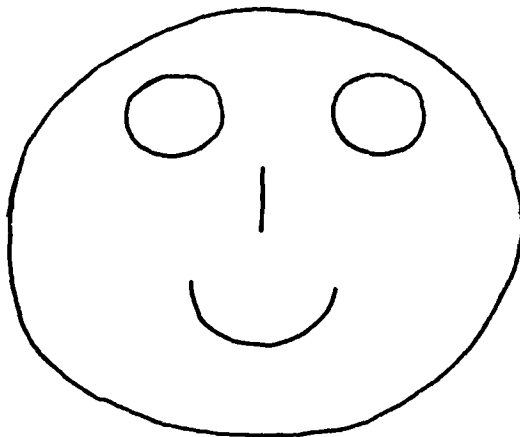
Comment:
None of the groups tried to get oval eyes as the drawing on the sheet suggests. They are more than satisfied with round eyes.

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
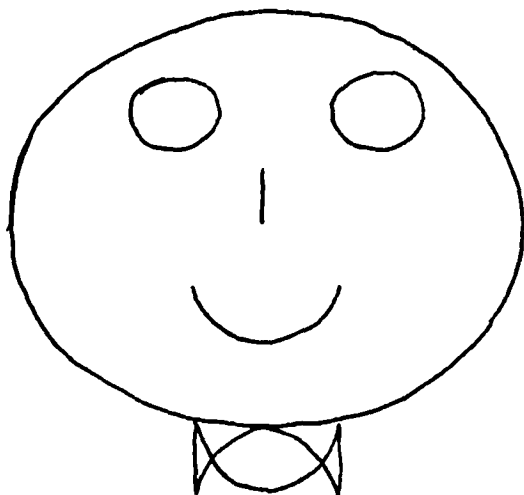
They are very satisfied with the result. I ask if they want a
computer print out of this. They do. They then look through
other saved procedures and ask if I could print some of those
out too. I agree to.

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 & Everlyn: 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 :-
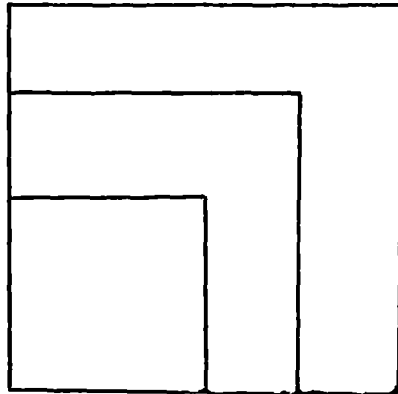
S 150, S 100, S 50. This works. They want to make it bigger. I
ask them if they can write a procedure for drawing this. They
type :-
TO X
S 300
S 200
S 100
END

They save this. They complete this activity very quickly.

They move on to the next drawing :-

181
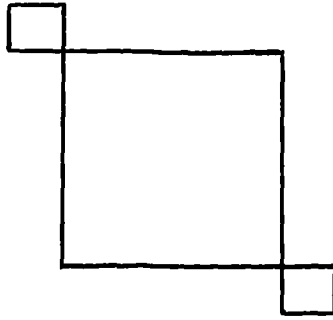
L: "TO...   What shall we call it?"
E: "No, we don't type it in yet" (meaning the title of the procedure). They work in direct-drive.

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".
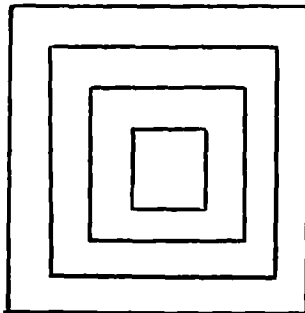
They first look at the procedure X and then do:
X   LT 90   X   LT 90   X   LT 90   X

182

It draws:-
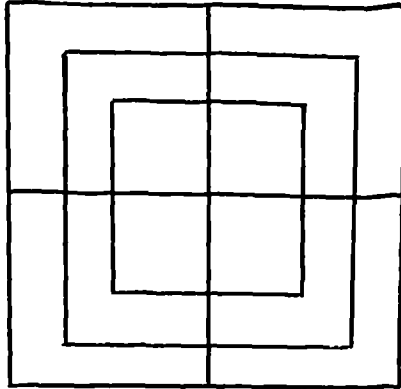
They claim they've done it. But I say that this isn't the same
as a the drawing on the sheet: "but it's nearly the same". I say
that it is not because it has a cross in the middle and only
three, not four squares. I encourage them - break down the
design and show them it is easy. So they look at the 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...

183

```
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:-
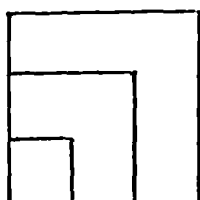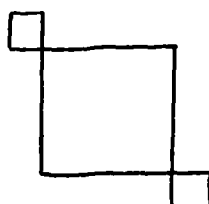
(a)   (b)   (c)
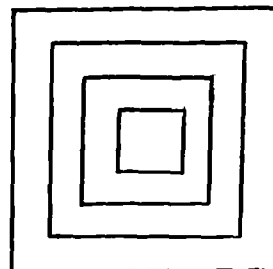
Counts: 000 - 028: design (a).
028 - 088: design (b).
088 - 199: design (c) (stopped at Breaktime)

Comment:
They worked together well, with some enthusiasm - they were quite
prepared to work on into Break. I think they really only needed
there memories jogging 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.
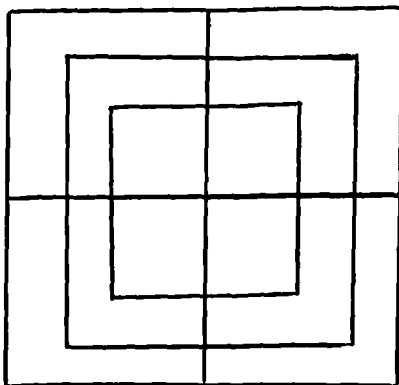G.: "Oh smart, that's easy".
They write and them type:
TO SQ :NUM
REPEAT 4 [FD :NUM RT 90]
END

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
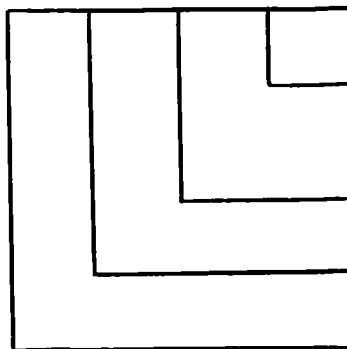
After the de-bugging, MAZE works. I take a photo - on request -
they seem well pleased with their work.

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 thay 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 vise 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 then 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 the 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"

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```
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
variabled 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 deign:-
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 of 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 x 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:

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```
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 brillant - 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.

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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
massage: 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 - swopped 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).
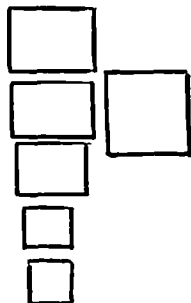
"It's a gun" (pointing down)
ADB: What are you going to do? Write a procedure?
Not much reponse. I ask them how they might tidy up their
procedure. Still not much reponse. I point out that PU   FD 65
PD is repeatedly used, and that a procedure could be written to
do this bit. They type:
TO EMPIRE
PU
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: Gurrr, 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 unusal 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.

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
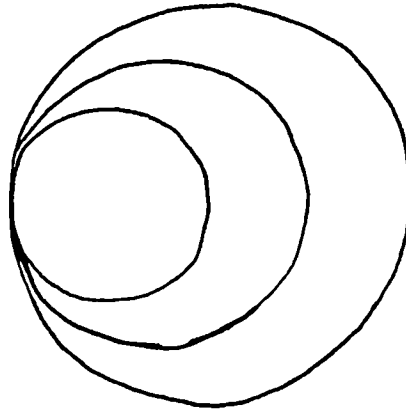   up)
LOAD "LE
LE
NOT ENOUGH INPUTS TO LE
EDIT "LE
I ask what shape the procedure draws - L: I don't know.

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.
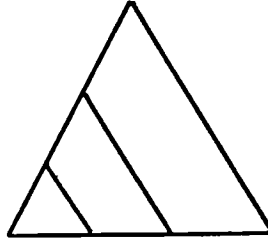E: (to L.) I told you so!
(E. doing most of the typing, as usual.)
It works.

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:-
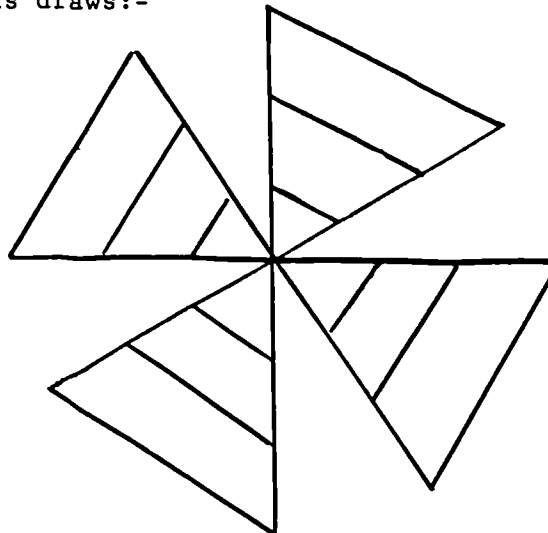
L: That's nice. Let's write a procedure for it.
TO POT
KR
KR   ADB: Could you make it shorther?
KR
KR   They edit, then:-
END

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 ENOUGHT 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.
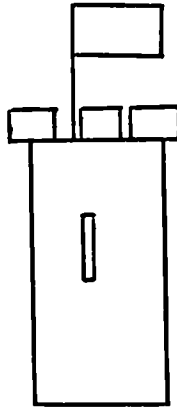
ADB: How many different shapes can you see?
E: Two - a flag and rectangles of different sizes. We can write
   a procedure with :NUM for the rectangles, and we've got a FLAG
   procedure on our disk.
[Good thinking: most resourceful].

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 interfer. 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

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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 noisey)

[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) Urmmm,
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

                 (S 30 is done first - they miss the turning, so
LT 90   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 dosn'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 need 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. loosing 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
```

230

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...

231

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".

232

[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
RT 45                   for drawing the next WEED.
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
```

233

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                          TO WEED           TO MOV
REPEAT 13 [WEED MOV]               FD 100            PU
END                                BK 100            RT 45
                                   LT 45             FD 100
                                   FD 100            PD
                                   BK 100            LT 90
                                   RT 90             END
                                   FD 100
                                   BK 100
                                   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 excercises, 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 dont 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 (definitly 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:-
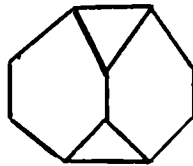
I ask them all if they can write about what they are going to
do. They all seem to find this difficult.
I ask E. what she is going to do, and she can tell me, but when
she writes about this she attempts to write Logo commands, and
then she merely writes a description of the pattern. Finally,
after further 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 postion)   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]   [2]
CRASH   (7-14)   VENNMAN   (9-11+)
SHOPPING (7-11)   VENNKIDS   (9-11+)

DIET   (10-15)   MISSINGSHAPE   (9-11+)
LITTER   (9-14)   GATES   (9-11+)
MQUIZ   (9-15+)   TRAINS   (6-13+)
QUIZ   (9-15+)   FRACTIONSSHAP   (8-11+)
BIRDS   EUREKA   (9-14+)
ANIMAL   (7-11)
FARMER   (7-11)
HELLO
TESTCARD

CODE: Lf142

[3]   [4]
WATCHPERSON   (8-11)   SHAPESHOOTER   (5-7)
SPANISHMAIN   (8-12)   SHAPEBUILDER   (5-7)
CAT&MOUSE   (4.5-9)   WHATSHAPE   (6-9)
BRICKUP   (9-11)   SYMMETRY   (6-9)
ERGO   (10-14)   ANAGRAM   (6-10)
BUILD   (5-16)   BOXCLEVER   (6-10)
MOREORLESS   (6-8)   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)

242

```
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 postioning 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 then
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/leasted 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 were 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 then 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:

257

```
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

```
TO OPIC
STAND                       TO STAND
FD 100                      PU
RT 90                       BK 200
FD 137.5                    PD
LT 90                       BREC              TO BREC
FIT                         LT 90             REPEAT 2 [FD 100   RT 90
BK 165                      FD 200                       FD 200   RT 90]
RT 90                       RT 90             END
FD 180                      BREC
LT 90                       FD 100                    TO FIT
FIT                         RT 90                     PD
PU                          FD 100                    SREC
BK 65                       LT 90                     MAN
LT 90                       BREC                      END
FD 250                      END
RT 90
FIT                         TO SREC
END                         LT 90
                            REPEAT 5 [FD 75   RT 120]
                            LT 150
                            END


TO MAN
FD 100         BK 50
LT 90          LT 90
FD 12.5        FD 50              TO SQ
RT 90          RT 90             REPEAT 4 [FD 25    RT 90]
SQ             FD 50             END
RT 90          PU
FD 12.5        BK 140
LT 90          RT 90
BK 10          FD 25
RT 90          LT 90
FD 25          END
LT 90
FD 50
```

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
absense.

                          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)

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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, pregancy 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
Mysincla: 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]

<u>Interview with Headteacher: Longsight School.</u>

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 <u>so</u> 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... <u>with</u> 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 <u>solve</u>
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. Urmm.... we were fortunate, as I said earlier, in that we did have urrmm 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 seen 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 possibilitites 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

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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: Li11

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: Li12

- 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 a 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: Li13

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 ur.... 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: Lil4

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 <u>worth</u> making the effort umm, having bought.... I

CODE: Li15

think when.... when ones buys <u>anything</u> 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 <u>force</u> 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: Li16

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 sucessful 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: Li17

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: Li18

because I think you've set us on the road - without taking part

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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.

Extracts only - no p is 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 INDIVIDUAL'S NEEDS.

These needs are related to the areas of the curriculum.

EXPRESSIVE ARTS.

SCIENCE STUDIES

HUMAN STUDIES

LANGUAGE SKILLS.

Music

Physical Education

Home Economics

Metalwork

Woodwork

Art & Craft

Physics.

Chemistry

Biology

History.

Geography

Religious Education

Maths

Welsh

English
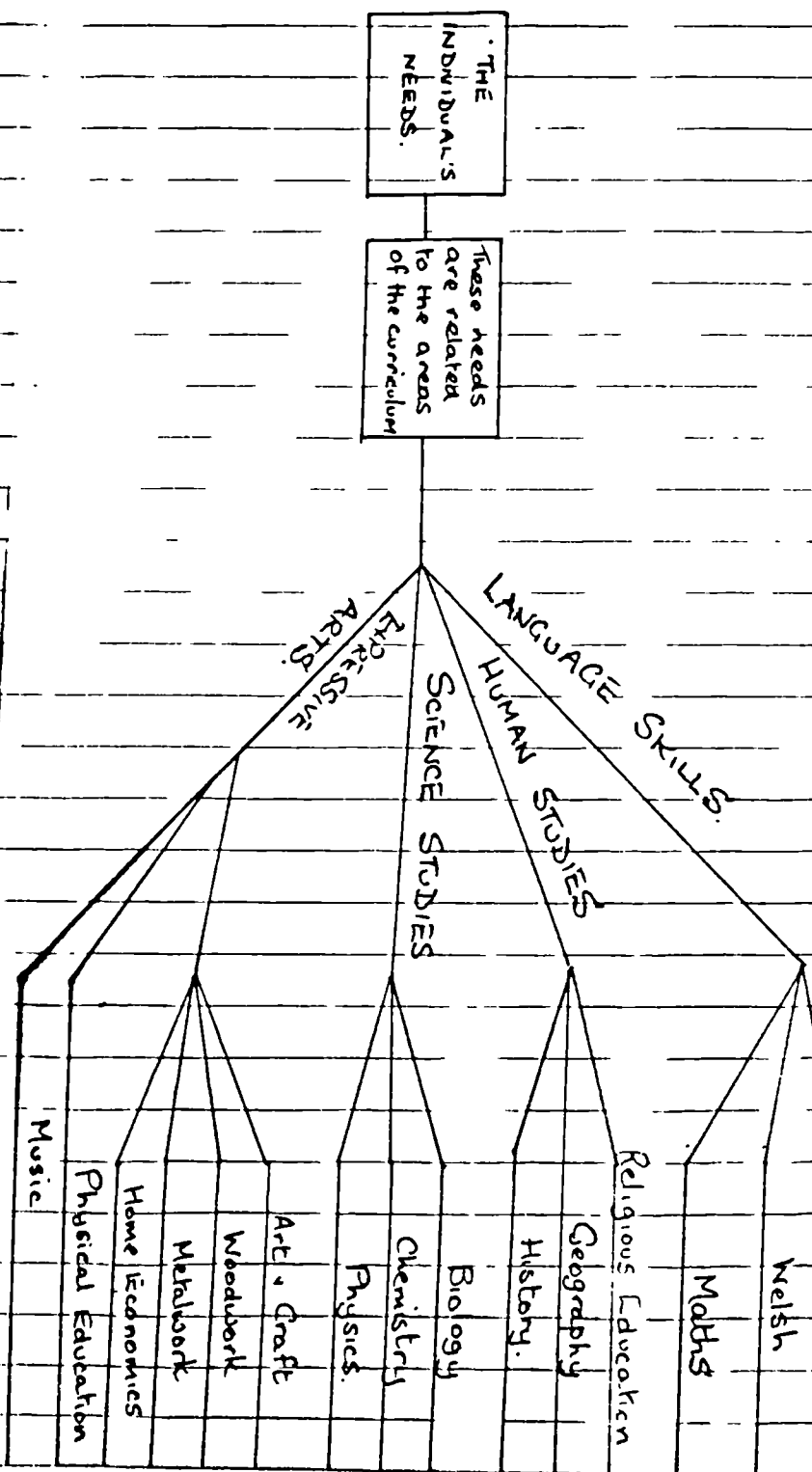
The Curriculum

There are some skills for which the primary school 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 schools, 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 competance 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

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.

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;

● 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

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 × 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 necessary 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.   Lep26

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

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, 19B 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   HMS 3 £3 50
5 Mathematics 5-11. A Handbook of suggestions HMI Series: Matters for Discussion 9.   HMSO £4.20

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

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 discovery:
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 LEA 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.

EXTRACT FROM D.E.S. BOOKLET :-
"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 develop: 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

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

GWYNEDD 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 RHIANNON LLOYD - CYMRAEG.

THE SCHOOL LIBRARY SERVICE

Apart 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:

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 (Llangefni).

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 ~ B.B.C. Model B ~ SOFTWARE.

~ ZX-81

CALCULATOR

BIG TRAK

BINOCULAR MICROSCOPES (2)

TEST TUBES, FLASKS ETC.

LANGUAGE MASTER.

LITTLE PROFFESSOR.

DUPLICATOR — SPIRIT ~ INK.

PROJECTOR — SLIDE ~ FILM STRIP.

MUSIC —

SESSION 11 (revised)
DEBUGGING

Debug the following FLAG procedure. It is
supposed to draw a picture like this :-
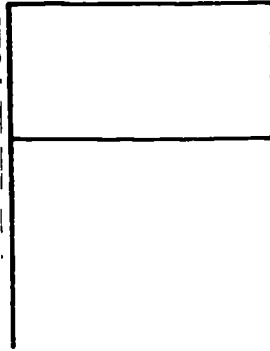
```
FD 120
RT 90
FD 80
RT 90
FD 40

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 :-
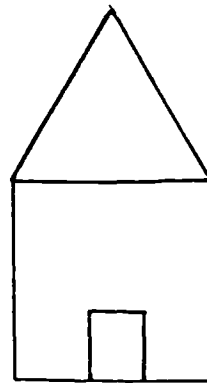
Try it out by typing HOUSE.
There seems to be a bug in the program !

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 ÷ 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 ÷ 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:

REPEAT no. of times [FD so many steps RT 360 / no. of times]

COPY THIS INTO YOUR BOOK.

DO YOU UNDERSTAND IT?

/ MEANS ÷ (divide by).

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]

ACTIVITY THREE

Copy the table into your book.
Fill in the missing numbers in the table below.

REPEAT		[FD	RT	
	360	1	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 column 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

~~Try making circles of different sizes and colours on~~ ~~the screen.~~ Change the size of the FD in REPEAT 90 [FD .. RT 4] to find the biggest circle you can draw, THAT FITS ON THE SCREEN.

ACTIVITY SIX

Write procedures to draw the following patterns.

STOP HERE → DO ACTIVITY SIX NEXT WEEK.

(3)

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.
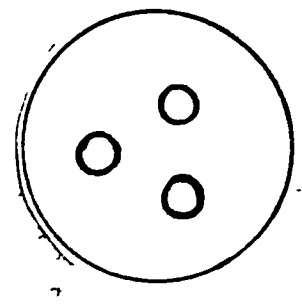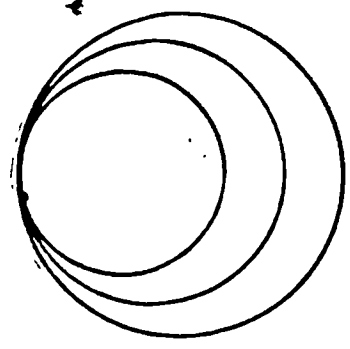
ARCS   READ EXTRA SHEET FIRST

An arc is part of a circle.
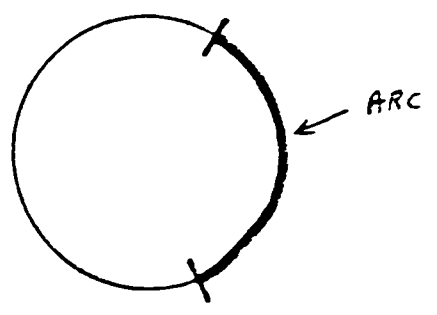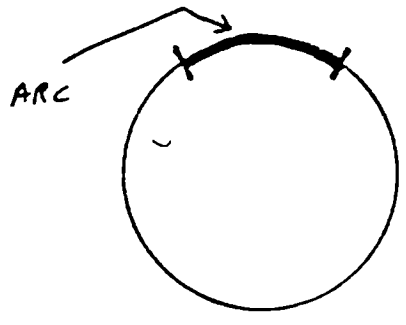
ARC

ARC

? ————————→ 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?

ACTIVITY SEVEN

Write procedures to draw arcs which are

(a) half a circle
(b) quarter of a circle.

(4)
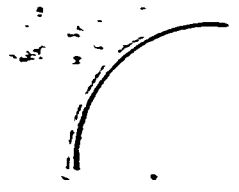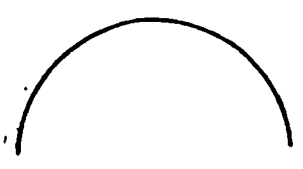
ACTIVITY EIGHT

Write procedures to draw arcs similar to those shown below.
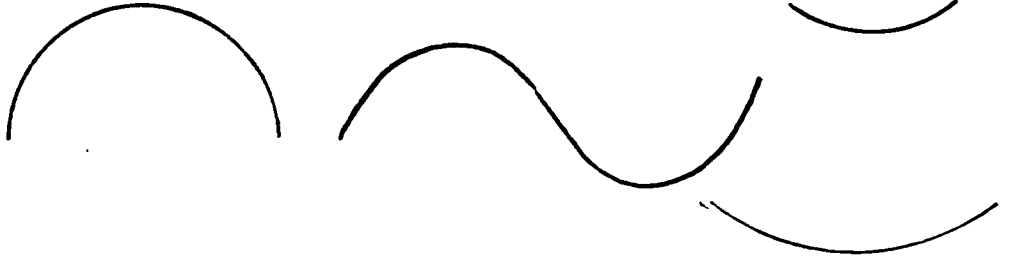
TURTLE PROJECT   Write a procedure to draw a face.
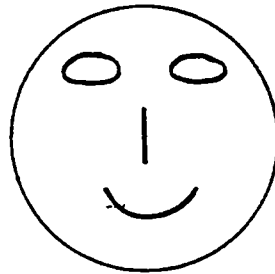
*These are the sheets for
Session 14 that the
children worked from.*

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
```
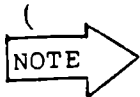
The computer needs to know if a procedure is going to
need an input. The :SIZE after SQUARE tells the
computer that we are going to use a procedure with
input.

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.
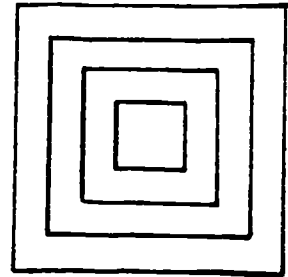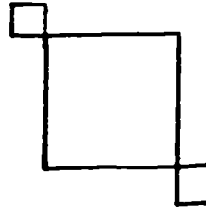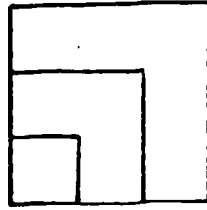
ACTIVITY THREE

Teach the computer new procedures such as

PENTAGON :SIZE   and   TRIANGLE :SIZE

ACTIVITY FOUP   Write procedures to draw patterns of your own using INPUTS and the REPEAT command.

HINT

Keep a note cf the procedures as you write them. You can add some cf your more interesting patterns to the computer's dictionary.

We call the number we type after the procedure name a VAPIABLE. Fcr 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.

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.
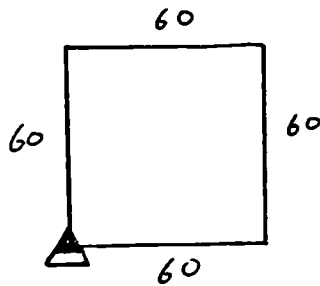
The computer took its commands from the procedure
BOX.

But what about this procedure?

```
TO SHAPE
FD 50
BOX
FD 75
RT 90
BOX
END
```

BOX is a subprocedure of SHAPE.

<div style="float:left">ACTIVITY TWO</div>

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.
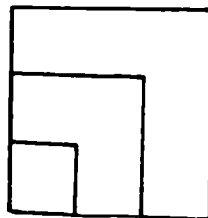
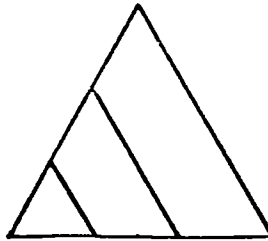We could write a procedure using SQUARE-with-input as a subprocedure to draw the same pattern.

Try this procedure out at the computer.

```
TO THREESQUARES
SQUARE 40
SQUARE 60
SQUARE 80
END
```
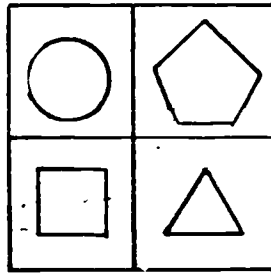
Look carefully at how the THREESQUARES procedure was built up from SQUARE :SIZE.

Write procedures to draw this pattern.

16.   USING SUBPROCEDURES TO SOLVE PROBLEMS

Suppose we want the turtle to draw a complicated
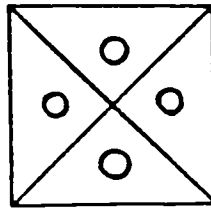pattern like the one shown below.

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.
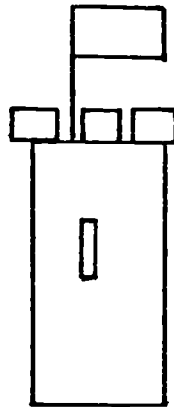
It is useful when building up procedures
(particularly for unconnected shapes) to include at
the end of each one, commands to get the turtle back
to its 'home' position, that is - centre screen,
facing up.

| TURTLE PROJECT | Write subprocedures and combine them to draw patterns of your own. |

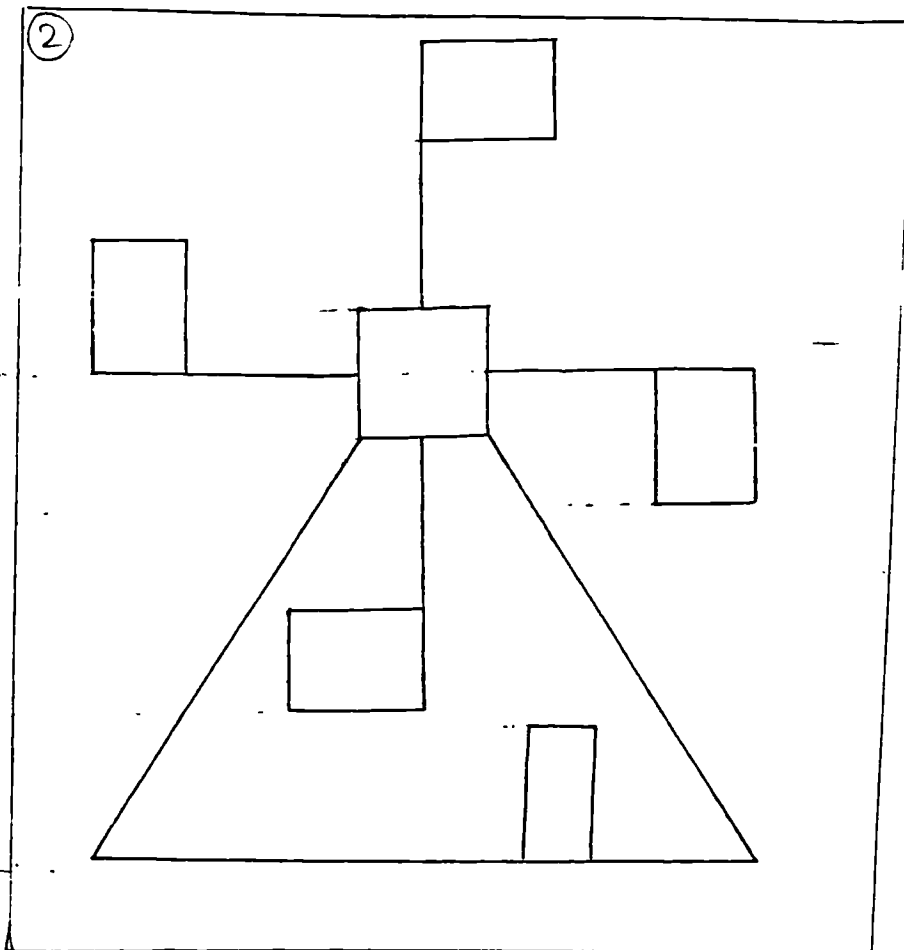WRITE PROCEDURES TO DRAW THE FOLLOWING LOGO DESIGNS.

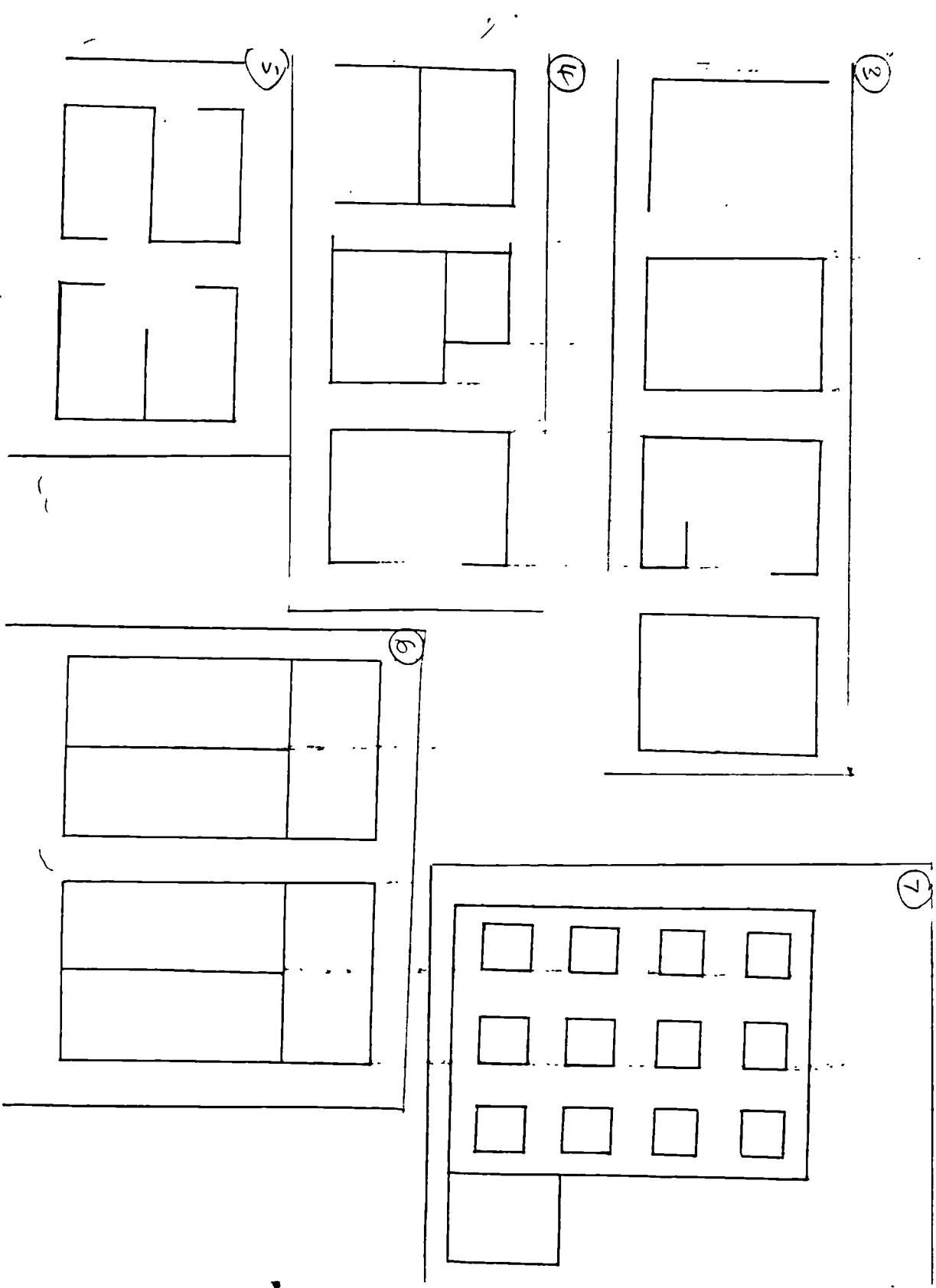Begin by writing down how you will go about writing a program to craw the design.

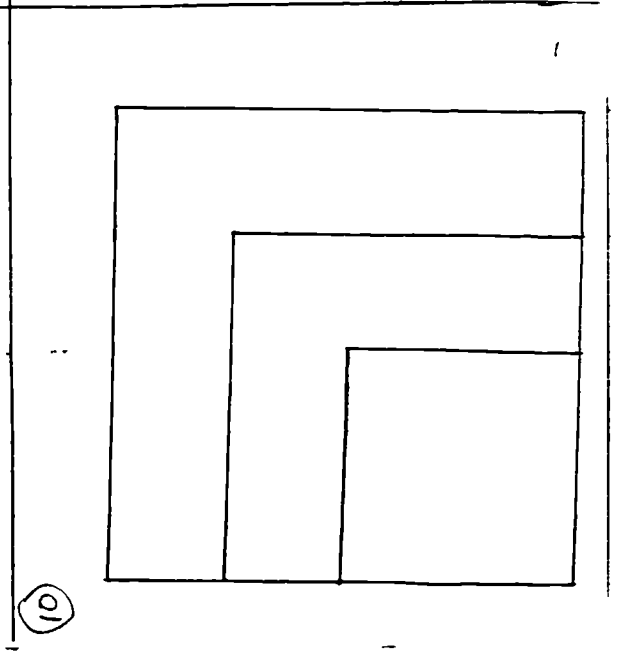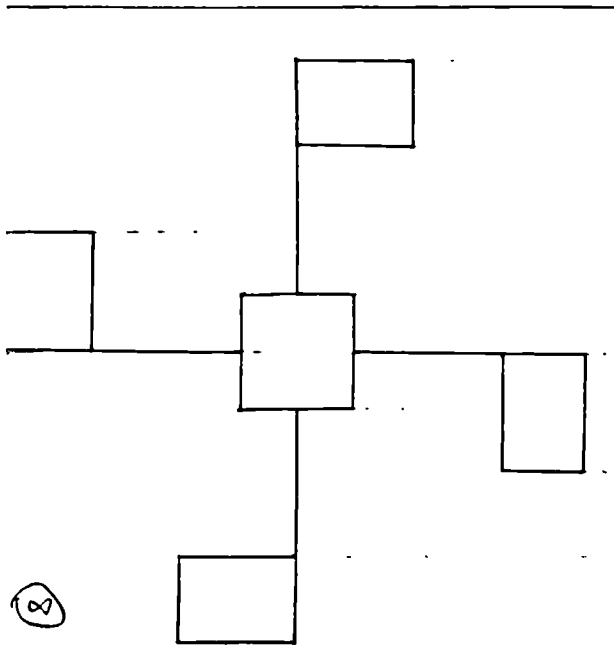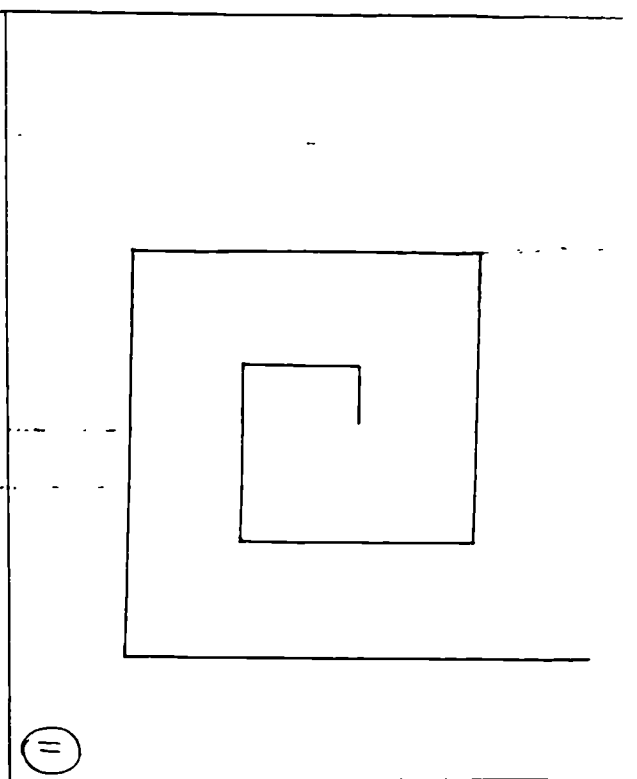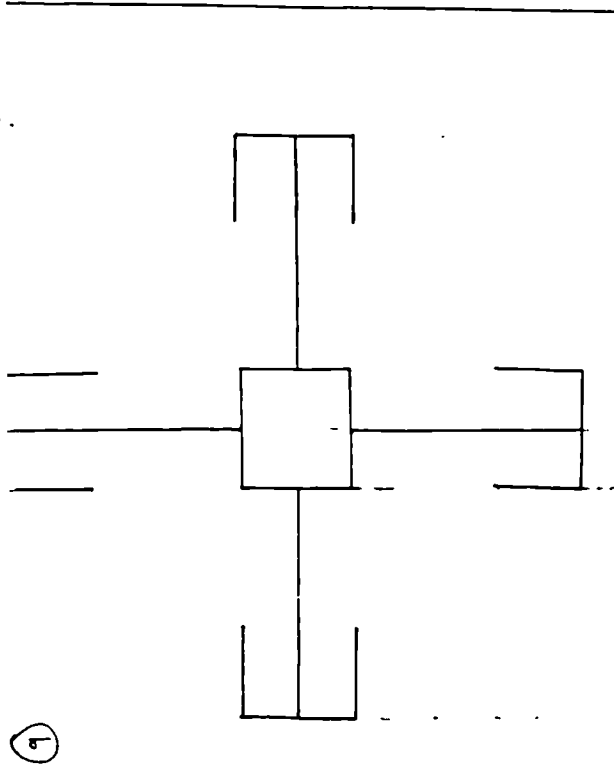Mark on the paper where you want the turtle to begin each part of the drawing.
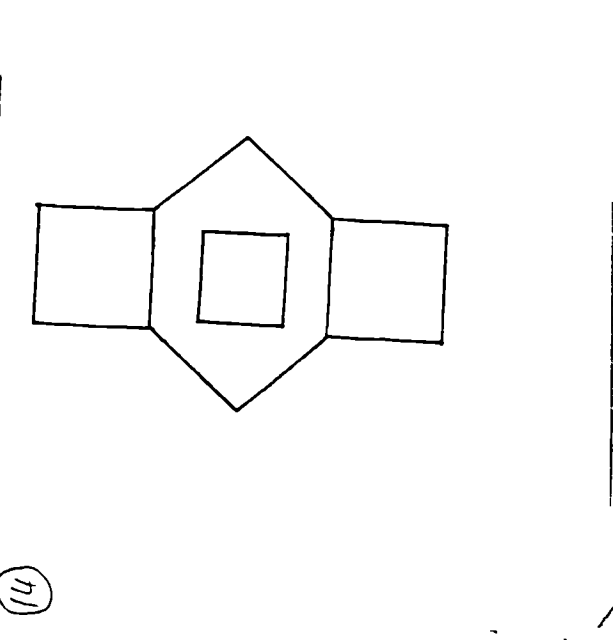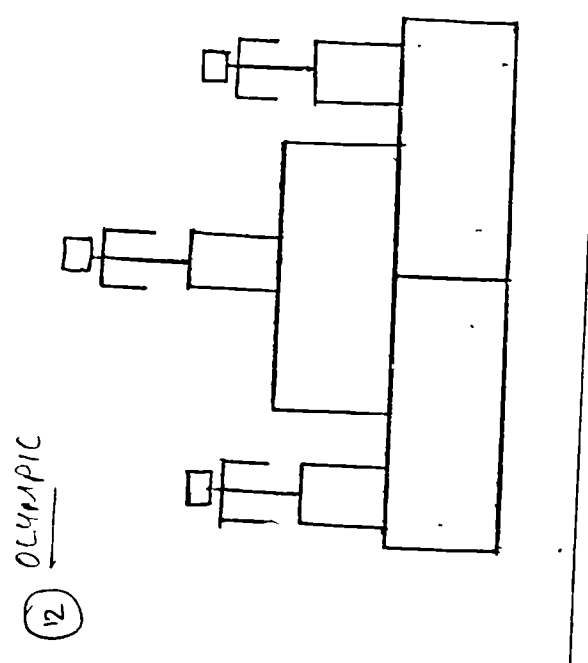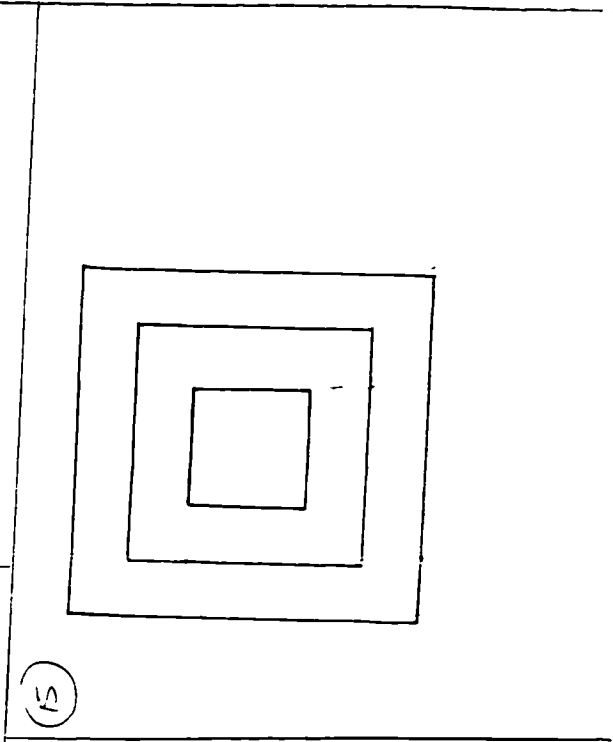
When you have finished, write about any problems you had.

①
DFSIGN AND DRAW A SIMPLE FACE.

②

7

11

8

10

12 OLYMPIC

13

14

15
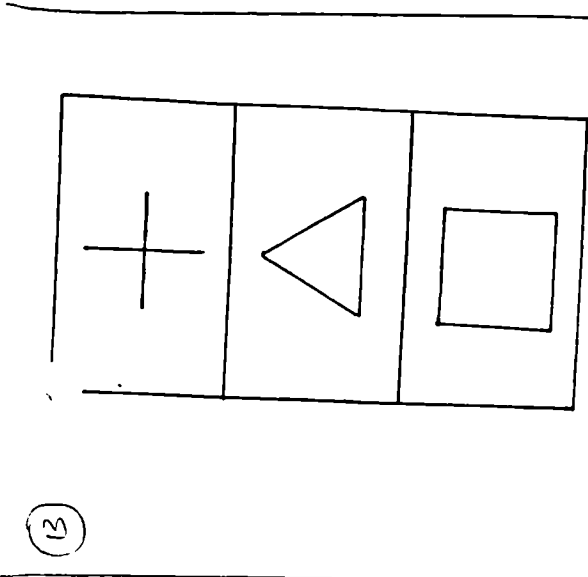
GRADED ARITHMETIC - MATHEMATICS TEST

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: $\begin{array}{r} £ \ p \\ 6.77 \\ + \ 3.45 \\ \hline \end{array}$ . ...

25   Subtract: $\begin{array}{r} 560 \\ - \ 192 \\ \hline \end{array}$ ... ..

Page total	

26

```
┌──┬──┬──┐
0  1  2  3
```

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?

$$\frac{2}{13} \quad \frac{1}{6} \quad \frac{1}{14} \quad \frac{2}{5}$$

....

42 Write in numbers: one hundred thousand and fifty-six. ....

43
$$\frac{3}{4} + \frac{1}{2} =$$

....

44
$$8 - 2\frac{1}{2} =$$

....
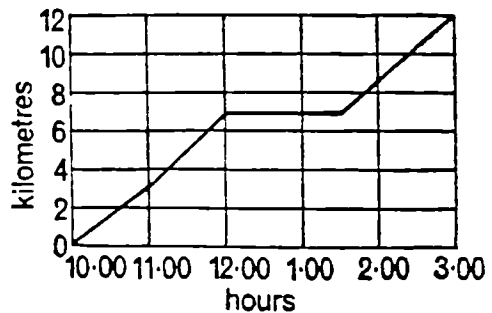
45 This graph shows the times and distances of someone walking 12 kilometres between 10 a.m. and 3 p.m.
How long did he rest for lunch? ....

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    $$\dfrac{37-9}{14} =$$ ....

48   How many minutes in one whole day? ....

49   $3y + 2 = 14 \quad y =$ ....
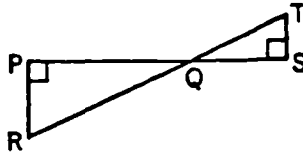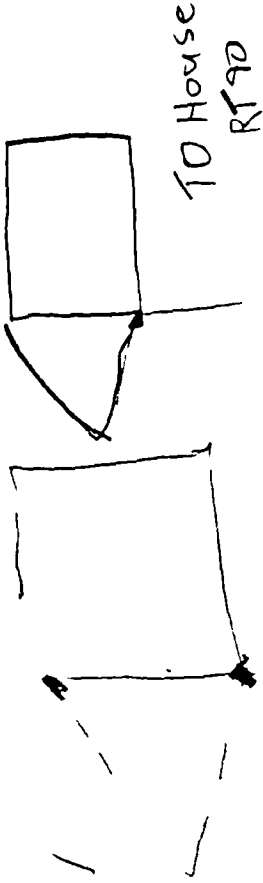
50   Write three other fractions in this set:

$$\left\{ \dfrac{1}{2}, \quad \dfrac{5}{10}, \quad .... \right\}$$

51   One side of a square is 14 cm. What is its perimeter? ....

52   If $\dfrac{3}{5} = \dfrac{b}{30}$ then $b =$ ....

53      $2(12-5) =$

54   A rope measures 7.5 metres. How many lengths measuring 1.25 metres can be cut from it? ....

55   Write $\dfrac{3}{4}$ as a percentage. ....

56   Simplify: $\dfrac{2}{3} \times \dfrac{1}{2} =$ ....

57      $5\dfrac{1}{4} + 3\dfrac{1}{3} =$ ....

58   Write 0.25 as a fraction, in simplest terms. ....

---

59   The average of 2, 4, and 9 is ....

60

In this figure, which angle is equal in size to $\angle T$? ....

61   A block of wood measures 6 cm by 5 cm by 4 cm. What is its volume? ....

62   $P = 3, \quad Q = 2. \quad P^2Q =$ ....

63   Write fifteen thousandths as a decimal. ....

64   What prime numbers are there between 20 and 30? ....

65      $2.2 - 0.04 =$ ....

66   How many minutes between 10.40 a.m. and 1.20 p.m.? ....

67      $20 \div \dfrac{1}{5} =$ ....

68   Yesterday, 21 out of 300 children in a school were absent. What percentage is this? ....

69      $12 \div 0.25 =$ ....

70   What is the square root of 400? ....

Page total	

TO House
RT 90
Repeat 4 [FD100 RT90]
Repeat 3 [FD100 RT 120
PU
FD 100
RT 90
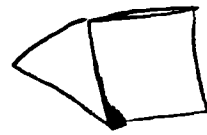FD 100
RT 90
FD 50
PU
RT 90
FD 50
RT 90
FD 30
RT 90
FD 50
END
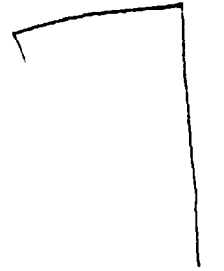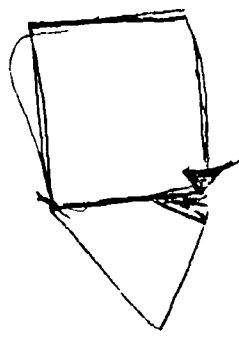
TO House
Repeat 4 [FD100 RT90]
Repeat 3 [FD 100 RT 120]
PU
RT 90
FD 100
LT90 = RT90
FD 30
LT70
FD 50
RT90
FD 30
END

TO ?

Pcircle
RT 90
PU
FD 75
LT 90
PD
Scircle
PU
RT 90
FD 250 300
LT 90
PD
SC RCL

PU
LT 90
LT 20) 110

FD 200

LT 45.

```
To  Nose                To  Mouth           Right> TO ugly
FD  50                                        Bcircl
End                                           pu
                                              RT 90
                                              FD 30
Scircl  =  Eye                                LT 90
Bcircl  =  Head                               PD
Nose    =  Line = Nose                        Nose
Mouth   =  arc = Mouth                        pu
                                              LT 45
      Wrong                                   FD 100
   To  ↓ ugly        R                        RT 45
   Bcircl          RT 9 90                    BK 50
   pu                 PD                       LT 90
   RT 90                                       FD 100
   FD 300          Mouth                       RT 90
   LT 90            End                        pu
   Nose                                        Sc -l
   pu                     X                    pu
   LT 45                                       R  9
   FD 100                                      FD 50
   RT 45                                       LT 90
   Eye Scir                                    p
    =                                          Scir
    2                                          p
   BK  50                                      RT 190
   LT 90                                      FD 200
   FD  90                                      RT 9
   R   9                                       FD 6
   FD                                          RT 90
   Scirl                                       PD
   pu                                          Mouth
   RT 90                                        End
   FD 300
   LT 90
   pu
   RT 180
   FD 200
   RT 40
   FD 60
```

```
TO FORT
  PU
BK59PD
Rec   300   160
   PU
  FD  300
  Rec 25    +SW 12
  RT 90
  FD 20 <
  LT 90
S 30
  RT 90
  FD 30
  LT 90
  Flag    <-- FD 160
  FD 160
  LT 180
  Rec
  S 30
  RT 90
  FD 30
  LT 90
  Rec 25 12
  PU
  RT 180
  FD 6
  PD
  Rec 15   50
  ENd
```
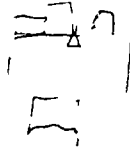
OLYMPIC

```
TO rex : SIZE : NUM
REPeat 2 [ FD : SIZE LT90 FD : NUM  LT 90.
    End .
```

```
TO LeSH

FD 75
LT 90
PU
B K 25
R T 90
P D
F D    25
L  T   90
F D    50
L  T   90
F D    25
L  T      90
P  U
F  D  25
P D
L T 90
F D 35
R    90
FD 15
LT 93
Rex 15 30
END
```

P TO OLYMOC
Bk ... 100
PPO RT
PU
FD
LT
PD
Rex
FD
LT 9
FD 10
90

RT
FT 75
96
100

F
FD
T 90
LeSH
F U
20
LT
FD 65
RT
F
T
75
RT 90

REX 100 50 **bug!**
FD 100
LT 00
FD 75

RT 90
LeSH
PU
Bk 20
L 90
FD 15
LT 90
FD 10
T 9
FD 25
FD
FeS
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 HEAD
Scircle Bcircle

Mouth
~~Mouth~~

~~Bcircle~~ Bcircle

Scircl = Eye
Bcircl = head
Nose = Line = Nose
Mouth = Arc = Mouth.

To ugly
B circle
Pu
Rt 90
FD 300
Lt 90
NOSE
Pu
Lt 45
FD 100
Rt 45
EYE SCIRC
Bk 50
Lt 90
FD 100
Rt 90
PD
Scirc L
Pu
Rt 90
FD 300
Lt 90
PD
Lt 90
Pu
Rt 180
FD 300 200

Rt 90
60
FD
RT 180
PD
Mouth

*cat
B curl ✓
flag
house /
LE ?, 5

hose
Scird
Semi 2 /
Turnel /
X
06
empire
gun
mirah
QC
scird
...

TO QW: size

RPT 4 [FD: size RT 90]
End.

QW.
To Empire
QW RT 45
PU
G + FD 65
PD
QW 50
PU
QW 60 FD 60
PD
QW /

PD
FD 65
PD
QW 70
PU
RT 90
FD 70
PD

QW 70
FD PU 0
PD PD
QW 70
PD
RT 00
FD 200
RT 90
FD 40 F90
LT 90
LT 90
RT RT 90
QW 45 39
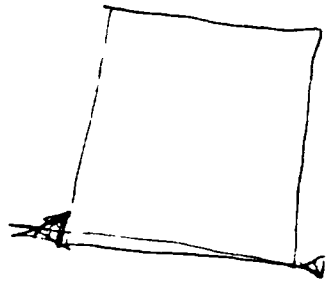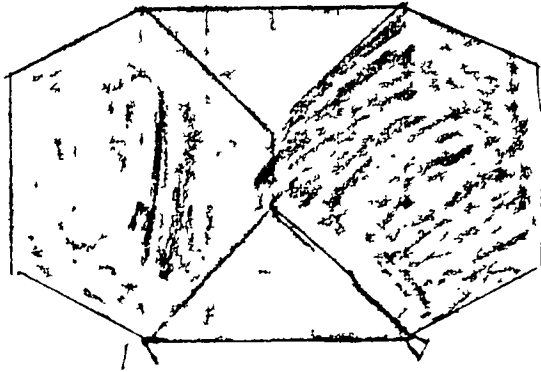
First of all I will define the 6 sided shape + ther just everything together.

26 sided shapes with 2 lines joined to them. underneath and at the top.

Tc 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.

This is the procedure for the 6 sided shape. now all I have to do save it and put everything together.
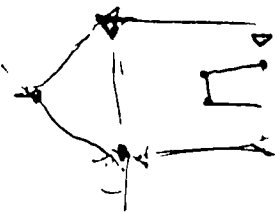
```
TO LJD
HEX
PU
LT 180
FD 285
RT 123.5
PD
HEX
END.
```

The bit when I was joining the two six sided shapes together, was the only difficult part. Otherwise it was easy & I think it was all worth it in the end.

To House Bugged
Repeat 4 [TI 100 Rt 90]
Repeat 3 [TI 100 Rt 120]
PU
Rt 90
TI 100
LT 90
FD 30
LT 90
TI 50
Rt 90
TI 30
End

To House de bugged
Repeat 4 [L TI 100 Rt 90
TI 100
Rt 90
TI 100
LT 180
Repeat 3 [E TI 100 Rt 120 3
PU
Rt 90
BK 100
LT 90
FD 33
PD
Rt 90
FD 33
LT 90
FD 33
LT 90
TI 33

RT 91
FD 100
LT 100

EXTRACTS FROM
GEORGE'S LOGO
WORK BOOK

No
Mr. Stone

Repeat Rt LO L [ ] Rt 3 J Big
PU
Rt 90
Id 100
LT 90
PD
Repeat 90 L [ ] d ≥ Rt h J Small
PU
Rt 45
Id 200
LT 45
PD
Repeat 90 L [ ] 3 Rt h I ...
Fin
Bk 200
PB
Repeat 90 L [ ] 3 Rt 4 J ...

No

Repeat Rt 0 L [ ] Rt 3 J
Rt 90 L [ ] J Rt 4 J
Repeat Rt 60 L [ ] 3 Rt 6 J
Repeat End

Repeat 90 [Td 3 (Rt 4)
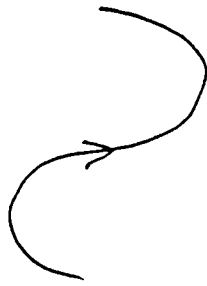
2o SUN
Face
PU
Rt 90
Td 315
Lt 90
PD
Td 100
BKRO
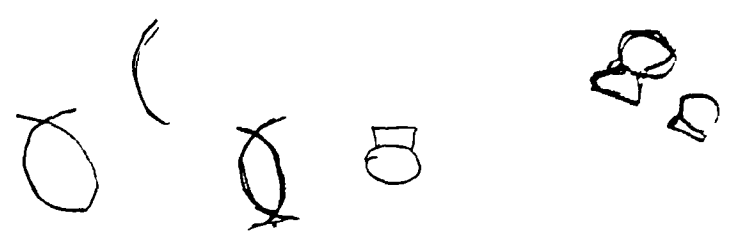PU
Td 100
Lt 90
Td 100
Rt 90
Eyes
PU
Rt 90
Td 200
PD
Eyes
PU

Rt 180
Td 100
Td 100
Rt 90
Td 20
Rt 90
Td 20
PU
BK
220
Rt 90
LT

FACE
EYES

LT 90
JD 300
LT 45
MD 100
...5

JD 30
LT 90
JD 71
...
RT 90
...
RT 90
JD 100
...
125

R BY 50
RT 90
JD 2
PU
JD 50
LT 70
JD 150
R 160
JL 300
RT 90
JD 550
LT 120
JD 550
RT 90
JD 100
LT 90

RK
LT
HT
MD 25
RT 8J
... 3
LT 91
MD
LT 70
JD 60
LT 70

#11 卌 111

No Wed
PU 2 → HOME
BK 390
DD
FD 100
BH 105
LT 45
JD 105
BT
MT 95
JD 100
I KNR

To No Nov
PU
FT 45
JX 100
AD
Co 47

TOTE

Mr's-11
TO 11
SETTLC 16
PU
HOME
6'·

To 4bag.
FD 300 300
RT 90
FD 300 150
RT 90
FD 300 150
RT 90
FD 300 150
, RT 90
(BK 300 150
end

To 4bag
FD 120
. RT 90
(FD 80
) RT 90
FD 40

LT 90
FD 80
end

FD 225
RT 90
FD 150
BK 150
LT 90
BK 225

Nr 18.
FD 150
RT 90
FD 75
LT 90
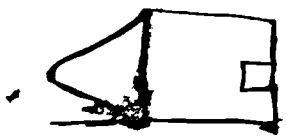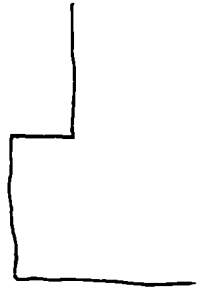FD 150
LT 90
FD 75
RT 90
BK 300

EXTRACTS FROM
NORMAN'S LOGO
WORKBOOK

To House
Repeat 4 [FD100 RT90]
Repeat 3 [FD 100 RT 120]
pu
RT 90
FD 100
LT 90
FD 30
LT 90
FD 50
RT 90
FD 30
end

To House
Repeat 4 [FD100 RT 90]
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 [FD 3 RT 3] Biggest.
90 [FD 3 RT 4]
60 [FD 3 RT 6]
45 [FD 3 RT 8]
40 [FD 3 RT 9]
30 [FD 3 RT 12]
20 [FD 3 RT 18]
15 [FD 3 RT 24]
10 [FD 3 RT 36]
5 [FD 3 RT 72] Smallest.

Repeat 90 [FD 22 RT 4] is
the Biggest that will fit on the
screen.
To happy 15 ya
Repeat 45 [FD RT 9]
Repeat 90 [FD RT 4]
Repeat 120 [FD RT 3]
end

To Big
Repeat 120 [FD 14 RT 3]
for to small
Repeat 90 [FD RT 4]
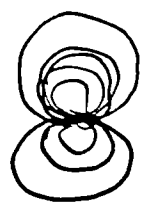
Repeat 90 [FD 3 Rt 4]

Repeat 60 [FD 3 RT 3]

To eyes
Repeat Face
  To eyes
  Repeat 30 [FD 2 RT 25]

To Nose
FD 100
end
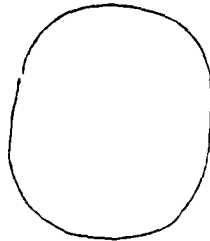
```
To Sur        PU
FD 50         RT 90
HT            FD 250
FACE          PD
PU            LT 90
RT 90         EY
FD 315        PU
LT 90         RT 180
PD            FD 250
NOSE          PD
PU            SEMI
FD 75         PU
LT 90         BK 220
FD 165        RT 90
RT 90         FD 175
PD            RT 90
EY            PD
              UFO
              END
```

```
To Fish
Set PC 14         50   RT 90  PD  FD 50
Repeat 30 [ FD 100
```

```
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
Fish
RT 15
Bk 650
```

```
Fish
PU
Bk 30
Rt 25
Bk 380 420
PD
LT 25
```

```
Fish
```

o: Black

```
Pu
Home
LT 45
BK 400
LT 35
PD
```

<u>FIELDNOTES MADE IN CALIFORNIAN SCHOOLS: CASE RECORD.</u>
MONTE VISTA   and   LA PATERA.

<u>MONTE VISTA.</u>

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.

<u>From Fieldnotes.</u>

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

icro-lab with 30 commodores networked together, and printers and
isk-drives. There is a micro-teacher, Ina E. who works in the
:hool every morning and organizes the computer activities (she
s doing an M.Ed. course at U.C.S.B. also). The Head is called
ohn E. - the "principle". He is very keen on computers, and
ogo, but especially children. Apparently he's real difficult to
et hold of because he's always with the children.

ent to the micro-lab, through the library. There before the
lass arrived. Apparently Ina E. was doing some introductory
ork with the class, before it came to the lab. The first class
ere timetabled from 9.10 - 10am. They were a class of 8, 9 and
) year olds - about 20 + class teacher + teacher's aide (a
arent).

)DE: MVf2

oday, they worked on an adventure program. Basically a story
nfolds about a haunted house, but the children are able to
ecide out of 2 or 3 choices, what happens next (e.g. whether the
none is answered or not, whether they go upstairs or leave the
ouse). The children were working in pairs (the older ones
artnered younger ones). But it was unusual for children to work
ogether. Normally they work alone with headphones on! The
eacher commented that it wasn't usual for them to work alone,
so it'll be noisy"! It was the first time these children had
sed this program. Ina E. had tried to emphasize the decision
aking part by getting them to draw flow charts of decisions they
ade. I don't think this worked too successfully because the
nildren were more interested in what was happening next rather
nan making notes about their decisions (but this isn't unusual).

enerally, there were good responses to the program and its
raphics. The story quite quickly comes to an end but the
nildren are then able to decide if they want to go through the
ouse again. Some went through several times.

)DE: MVf3

t several points, the teacher and Ina E. reminded the children
nat flow charts had to be written down. At the end they were
old to write out one of their stories today and draw pictures
) go with it.

ney did this later. They still worked in the same pairs.

uring "recess" I talked to Ina E. and learned that the micro-lab
as timetabled so that each of the 16 classes get about one good
our each.

also found out that the micro-lab had been in existence for
oout 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                    They had a bug with WING.  I tried to
GLUE                    help but couldn't easily as they were
CAP                     using position co-ordinates to move it
GLUE1                   and that was where the bug lay, and I did
WING                    not know the position co-ordinates.
GLUE2                   John E. managed to solve the problem
WING2                   for them.
END
```

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: own
Never allow a child to work at the computer on his/her.^ 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-stroming 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 devestating 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 throughly 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 similarily 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
startegies 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 mananged 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.

CODE: MVf20

Plan of Micro-lab:

```
 _____
|                                                        |
|   C         C         C         C         C         C  |
|_____|
|                                                        |
|   —         —         —         —         —         —  |
|                                                        |
|                                                        |
|    _____     _____     _____     _____
|   |         | |   | |         |   | |         | |   | |         |  |
|   | D       | |   | |         |   | |         | |   | |         |  |
|   | D       | |   | |   C     |   | |   C     | |   | |   C     |  |
|   |         | |   | |         |   | |         | |   | |         |  |
|   | P       | |   | |   C     |   | |   C     | |   | |   C     |  |
|   | P       | |   | |         |   | |         | |   | |         |  |
|   |         | |   | |   C     |   | |   C     | |   | |   C     |  |
|   | D       | |   | |         |   | |         | |   | |         |  |
|   | P       | |   | |   C     |   | |   C     | |   | |   C     |  |
|   | P       | |   | |         |   | |         | |   | |         |  |
|   | P       | |   | |   C     |   | |   C     | |   | |   C     |  |
|   | D       | |   | |   C     |   | |   C     | |   | |   C     |  |
|   | D       | |   |_|_____|   |_|_____|_|   |_|_____|  |
|   |_____|_|                                                    |
|                                                                    |
|  Outside                                            Library        |
| <-----       —       —       —       —       —       ----->        |
|                                                                    |
| _____             |
||          P                                           |            |
||   C      D      C      C      C      C      C         |           |
||_____|
```
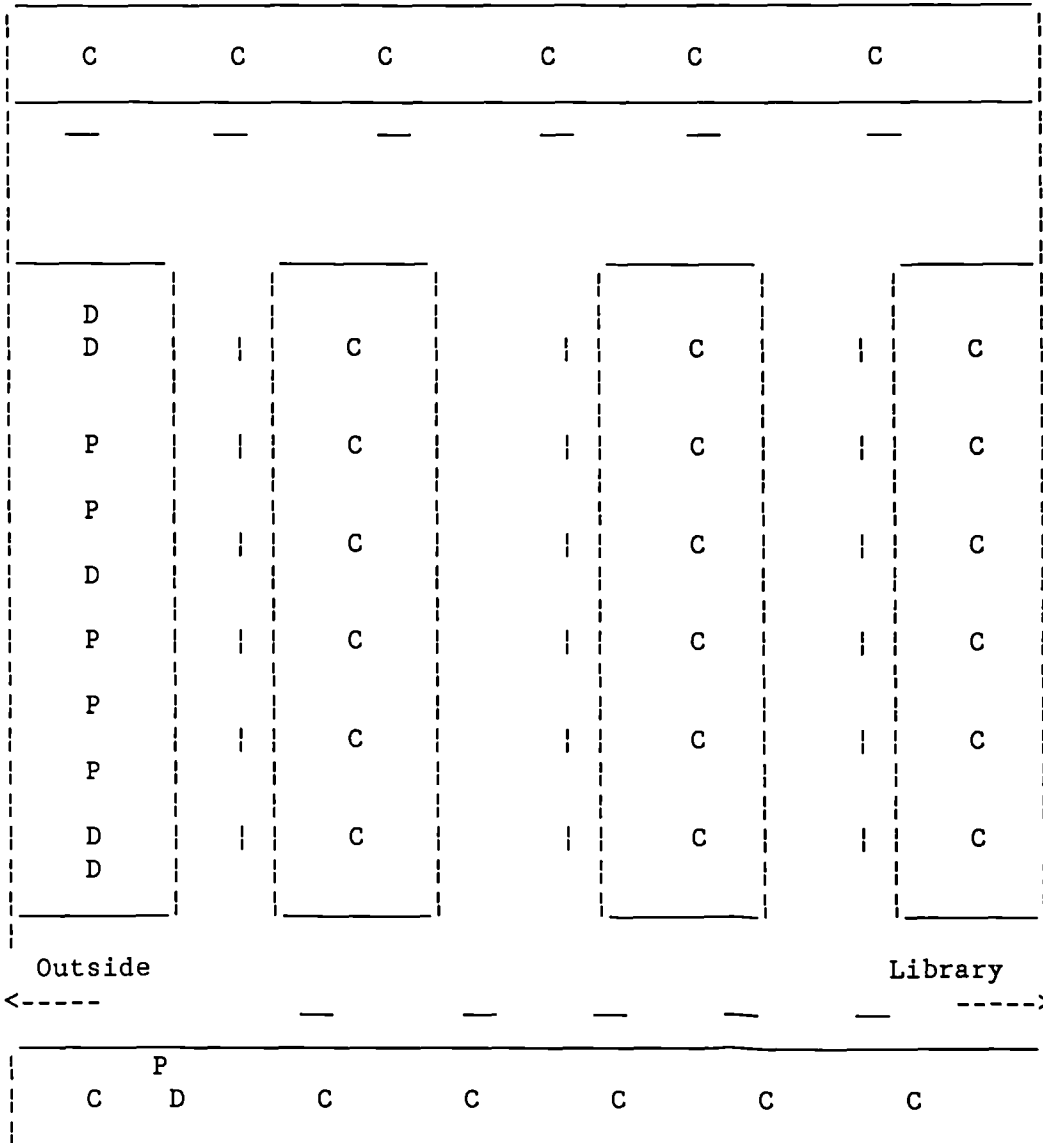
C = Monitor and commodore computer
P = Printer
D = Disk-drive
__ or | = chair

CODE: MVf21

Chat with Ina: About how she'd introduced Logo:

287

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

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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 difficultto 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 x 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
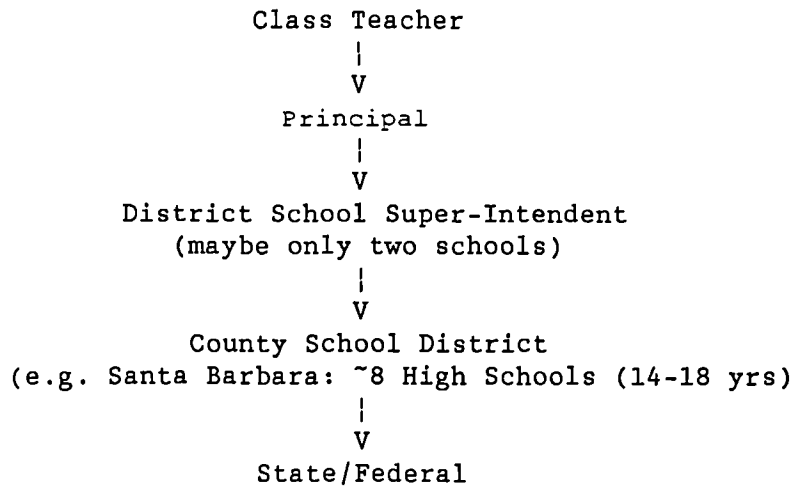difficulties, but it doesn't seem to be "the answer".

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:

```
                Class Teacher
                     |
                     V
                 Principal
                     |
                     V
        District School Super-Intendent
            (maybe only two schools)
                     |
                     V
            County School District
(e.g. Santa Barbara: ~8 High Schools (14-18 yrs)
                     |
                     V
                State/Federal
```

MATH-

Bumble Games

Gertrude's Puzzles

Math Blaster

Fay That Math Woman

The King's Rule

Sweet Shop-K/1

Grabit 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

Kiduriter

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

Paws (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

Colorasauras

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	Apple Logo
SETXY	SETPOS [ ]
SETX	SETX
SETY	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
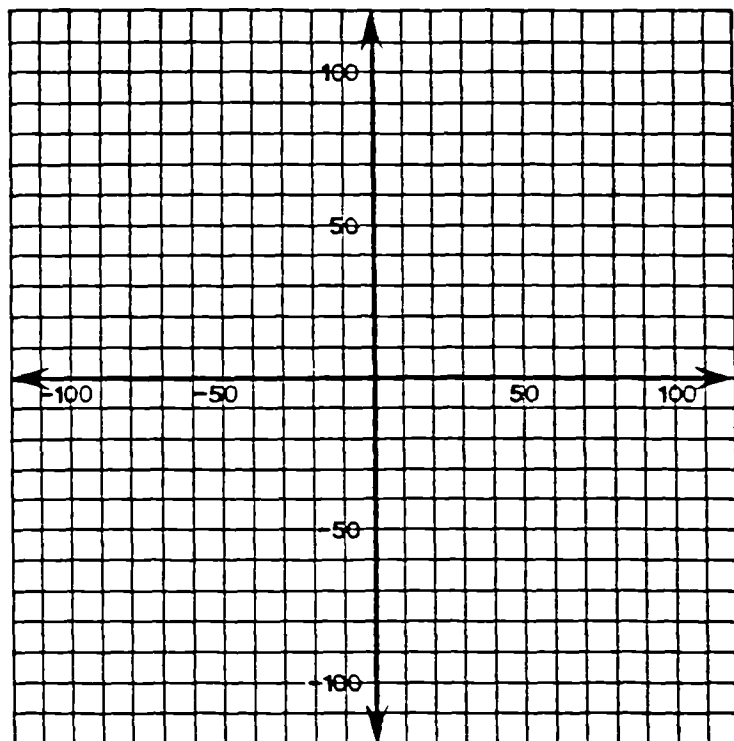
PLOT THE FOLLOWING POINTS AND FIND THE HIDDEN PRIZE. USE THE EDITOR IN CASE YOU MAKE A MISTAKE. LOGO COMMANDS NEED TO BE INSERTED AT THE INDICATED SPACES.

X	Y
FULLSCREEN PC 4 BG 11 PU	
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?
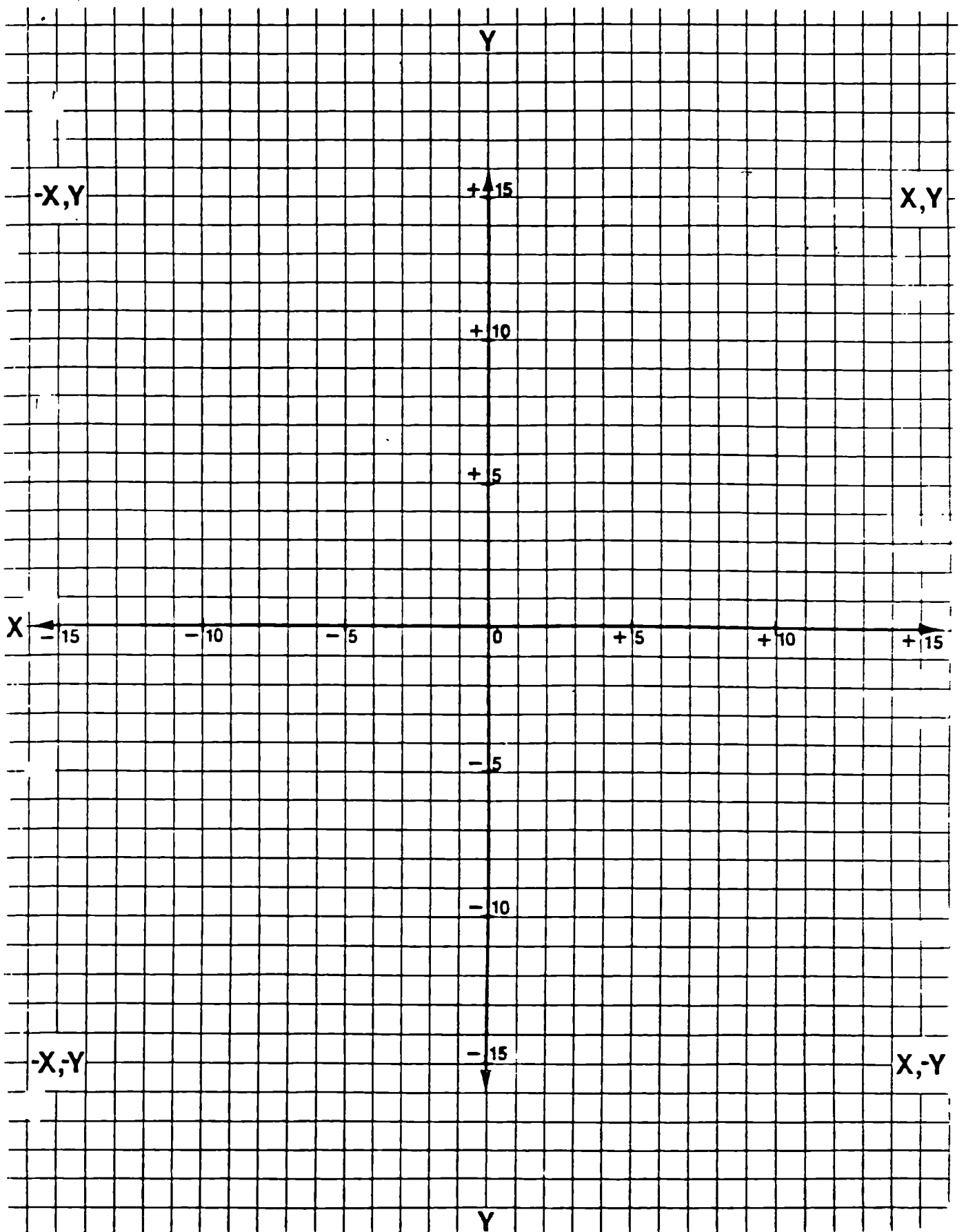
_____

USING THE COORDINATE PLANE TO DRAW AN OBJECT
CODE IN THE FOLLOWING PROCEDURES USING THE EDITOR AND GET A SURPRISE

```
TO B
  HOME CS C
  HT PU SETXY 60 ( - 20 ) PD PC B
  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 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
```

```
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
```

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 "1
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
```
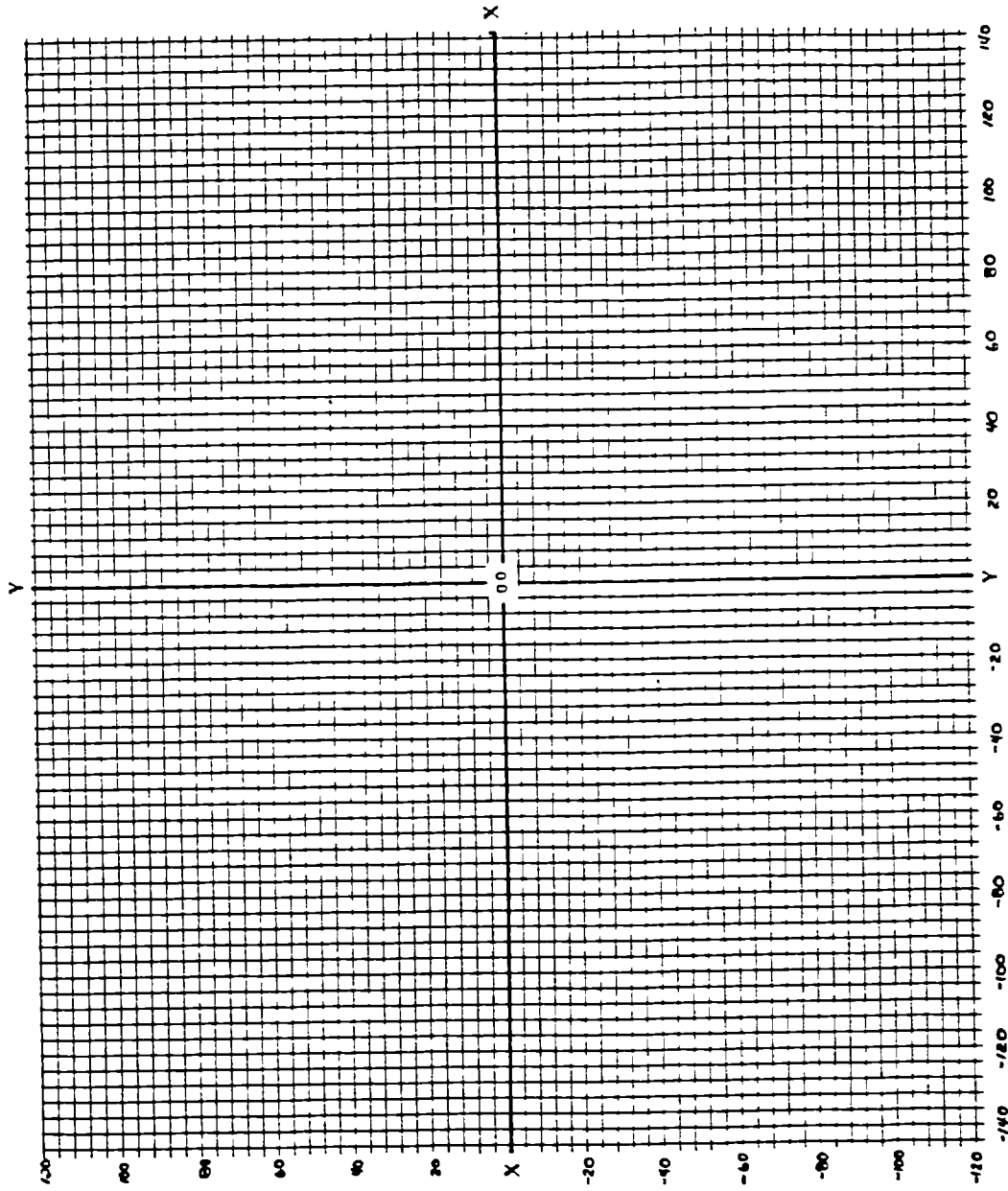
PE#21

X

Y

0 0

Y

X

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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,
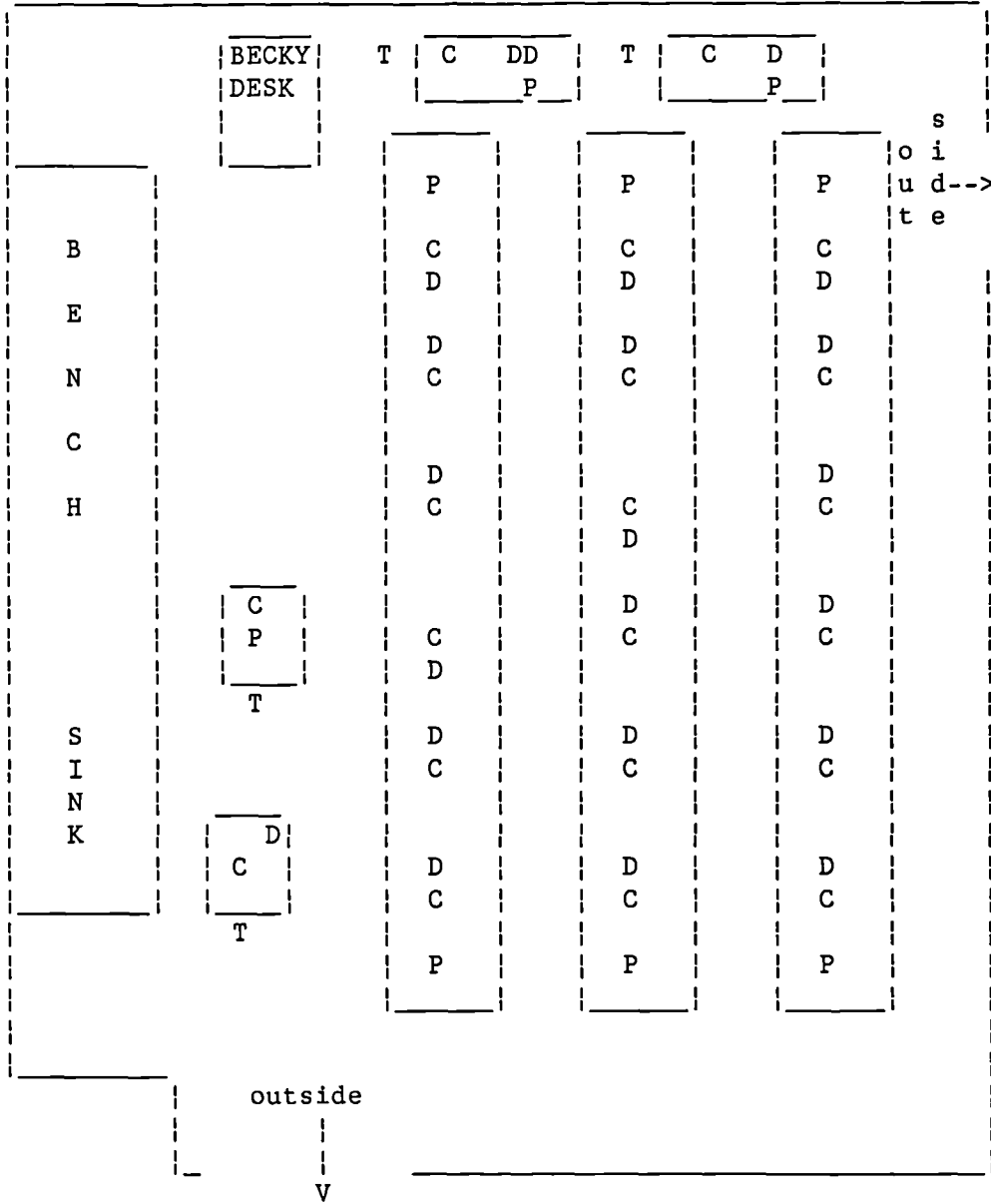and there are also some bilingual classes.

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".

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CODE: LPf2

Micro-Lab Plan:

```
 _____
|          _____                                        |
|         |BECKY|   T | C    DD  | T | C    D  |          |
|         |DESK |     |_____P__|     |_____P__|        s |
|         |     |      _____       _____     _____  |o i
|_____  |_____|     |      |     |      |    |      | |u d-->
|       |             |  P   |     |  P   |    |  P   | |t e
|       |             |      |     |      |    |      |
|   B   |             |  C   |     |  C   |    |  C   |
|       |             |  D   |     |  D   |    |  D   |      |
|   E   |             |      |     |      |    |      |      |
|       |             |  D   |     |  D   |    |  D   |      |
|   N   |             |  C   |     |  C   |    |  C   |      |
|       |             |      |     |      |    |      |      |
|   C   |             |      |     |      |    |      |      |
|       |             |  D   |     |      |    |  D   |      |
|   H   |             |  C   |     |  C   |    |  C   |      |
|       |             |      |     |  D   |    |      |      |
|       |              ___   |     |      |    |      |      |
|       |     |  C  | |      |     |  D   |    |  D   |      |
|       |     |  P  | |  C   |     |  C   |    |  C   |      |
|       |     |_____| |  D   |     |      |    |      |      |
|       |       T     |      |     |      |    |      |      |
|   S   |             |  D   |     |  D   |    |  D   |      |
|   I   |             |  C   |     |  C   |    |  C   |      |
|   N   |      ___    |      |     |      |    |      |      |
|   K   |     |   D| |      |     |      |    |      |      |
|       |     | C   | |  D   |     |  D   |    |  D   |      |
|_____|     |_____| |  C   |     |  C   |    |  C   |      |
|               T     |      |     |      |    |      |      |
|                     |  P   |     |  P   |    |  P   |      |
|                     |_____|     |_____|    |_____|     |
|                                                            |
| _____                                                     |
|_|    |                                                     |
|  |          outside                                        |
|  |            |                                            |
|  |_           |          _____  |
                V
```

C = Apple II Micro + colour monitor
D = Disk-drive
P = Printer   (The school has had the micro-lab for
T = Trolley   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 nursary 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 nursary
rhymes too?". She then read out a few nursary 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
accidently 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.

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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 nursary 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 prehaps 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 then a chance to practice drawings to go along with the nursary 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 nursary 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
forsee 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.

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 insructions 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 informnation 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
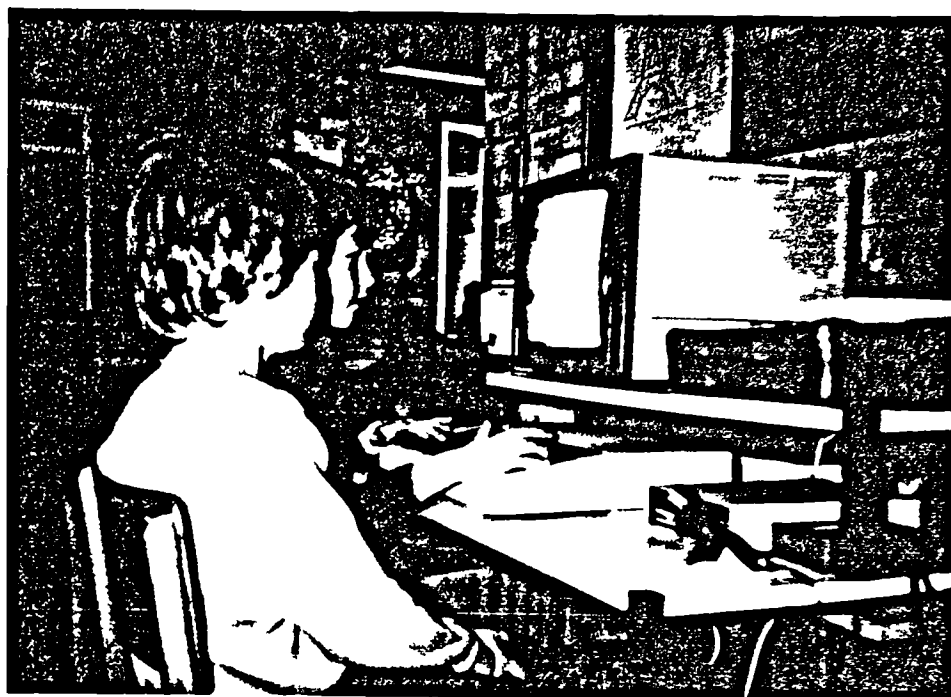
Using "Number Chaser"
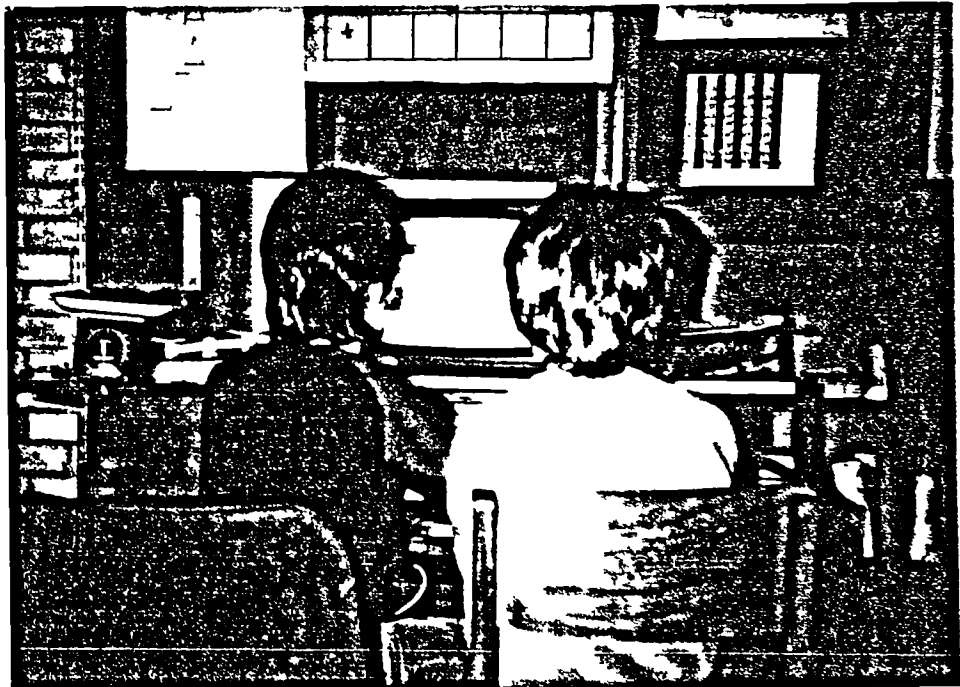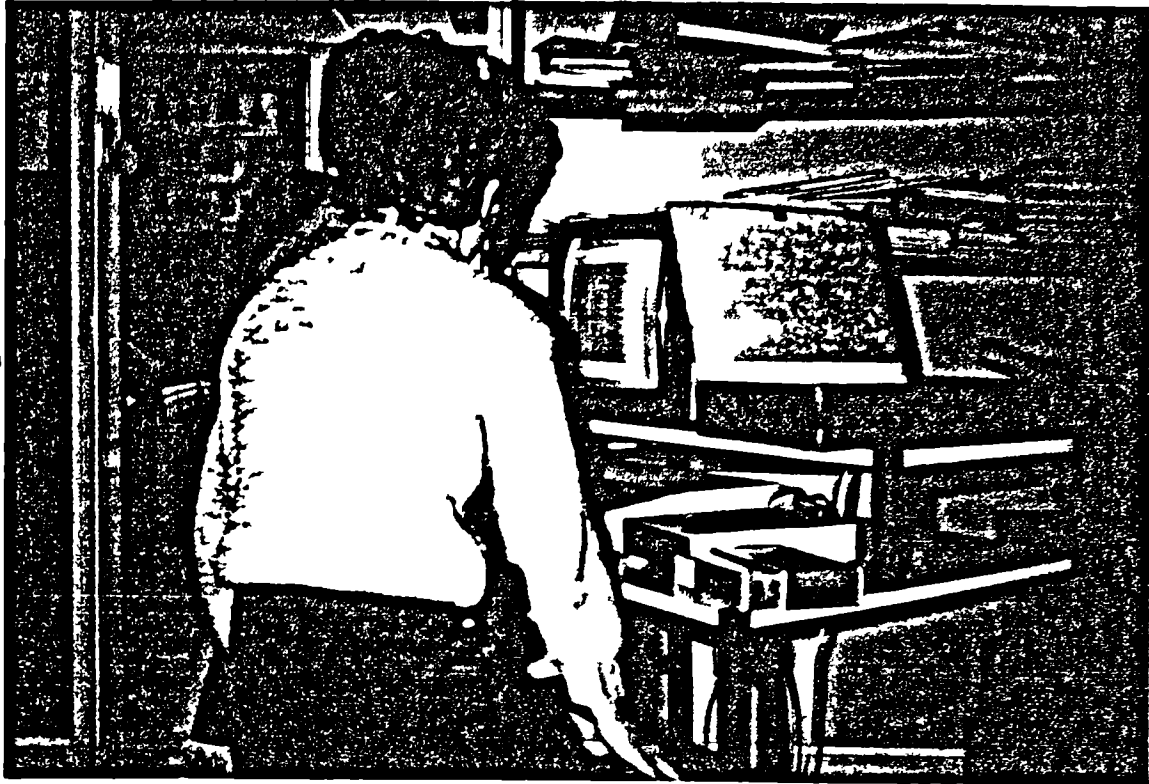
"Brick Up"
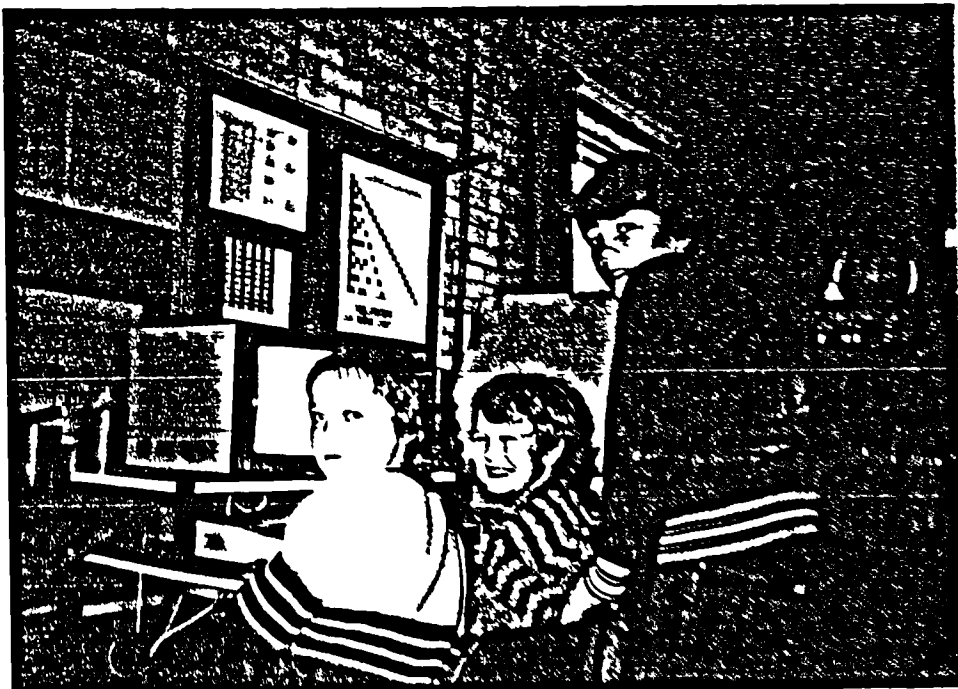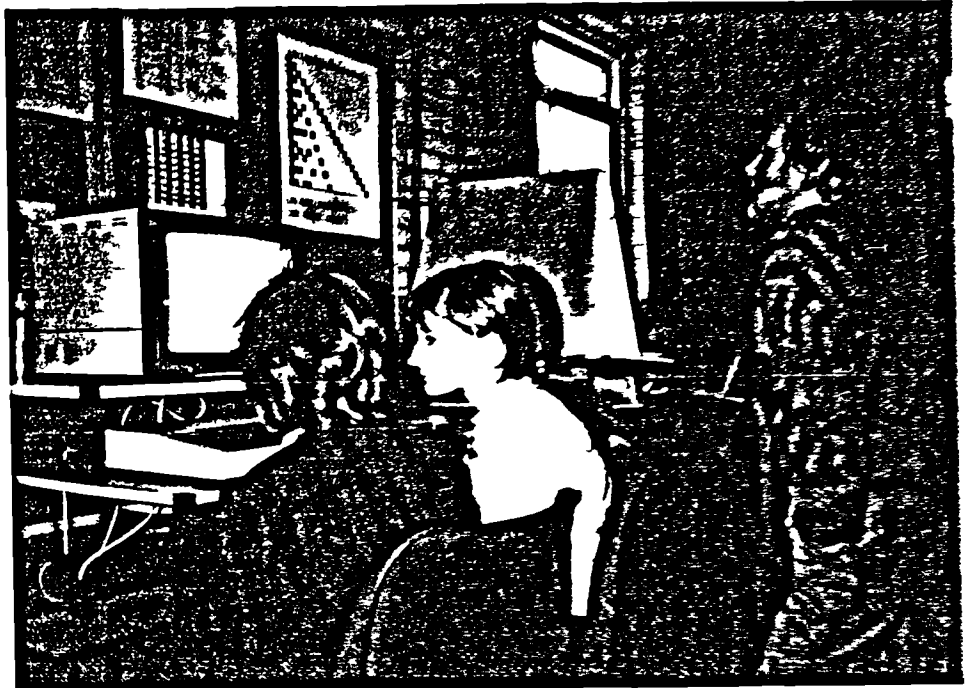
USING COMPUTERS AT BEN MERCY SCHOOL
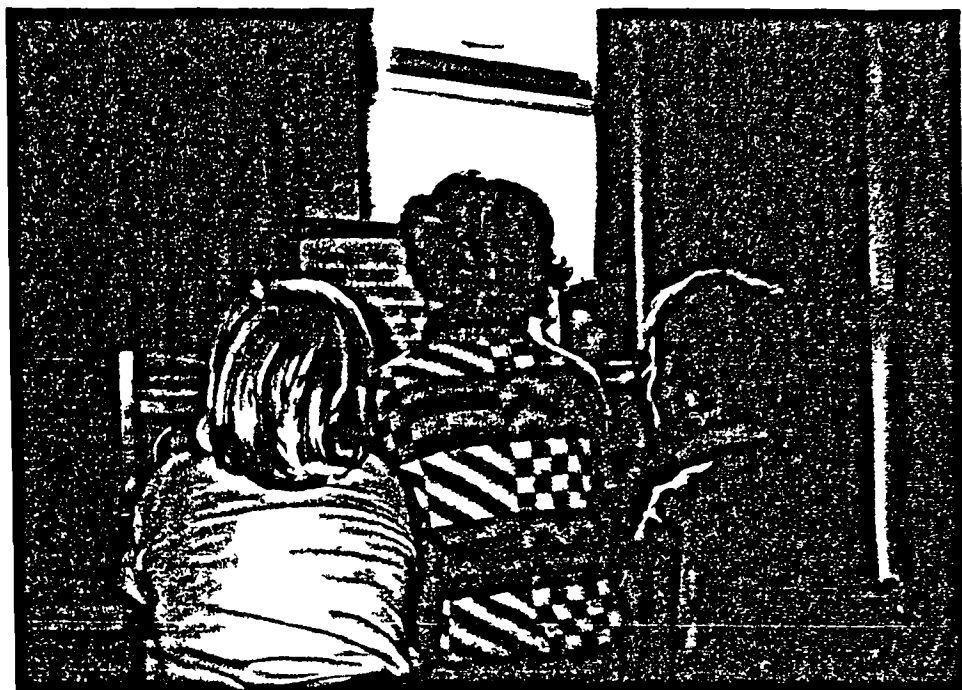
"Number Painter"

Collecting data for the "Quest" files in the third year Junior class
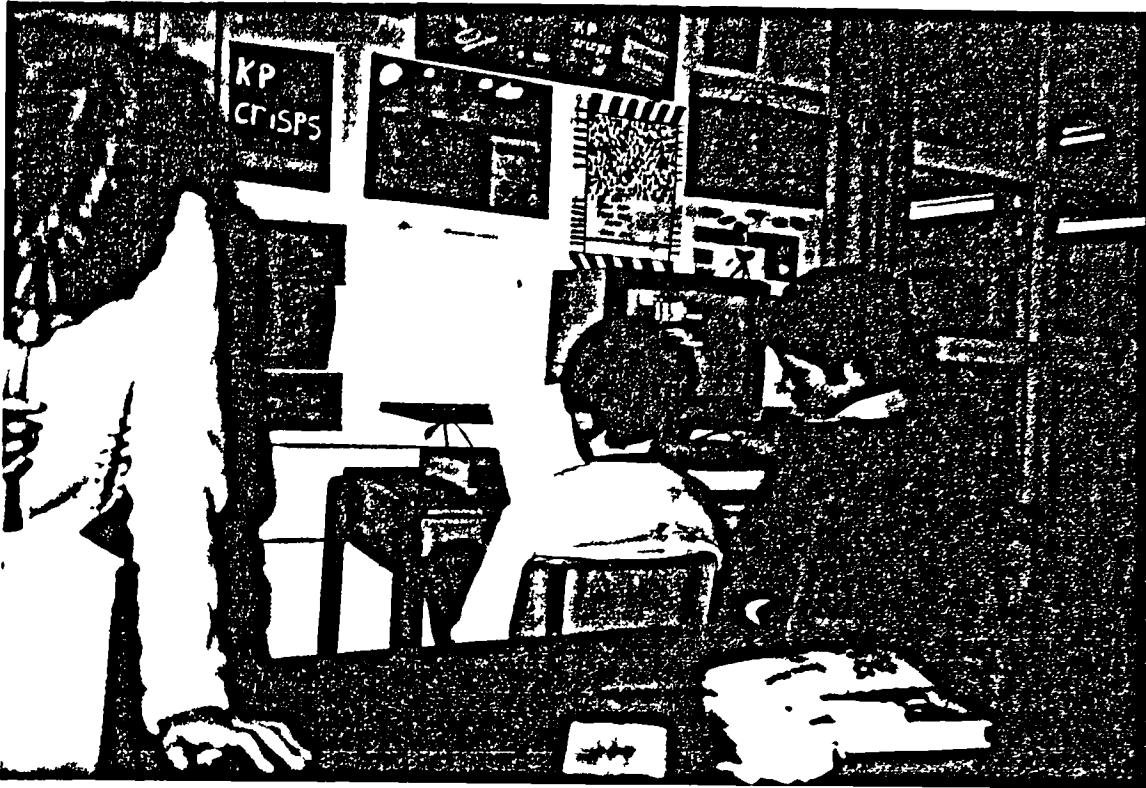
Recording data for the "Quest" files in the third year Junior class
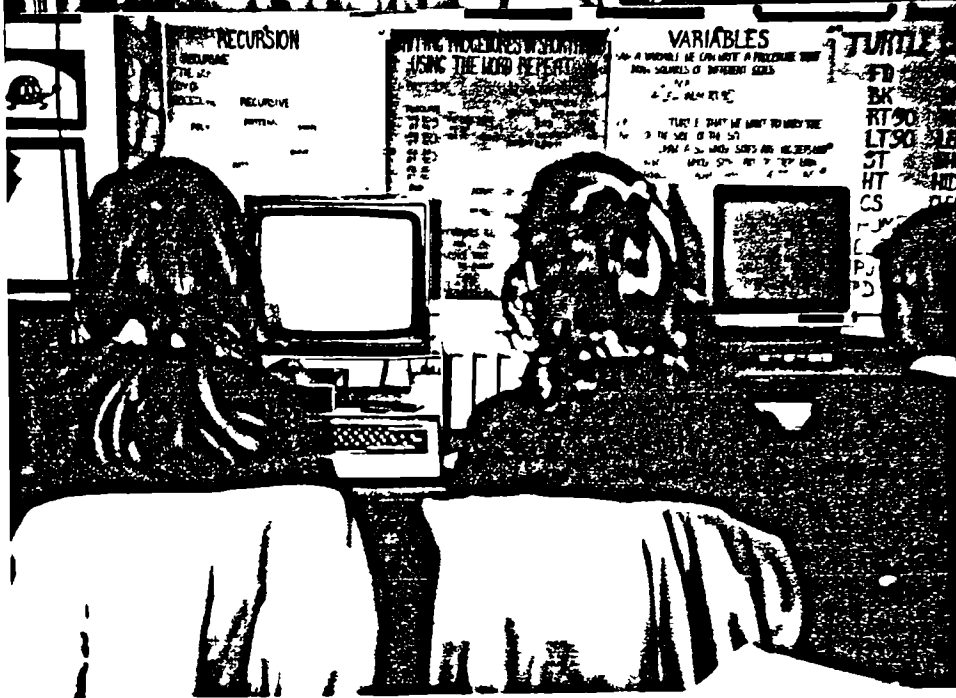
Lisa and Everlyn
at their
Logo work

George and Norman at their Logo work
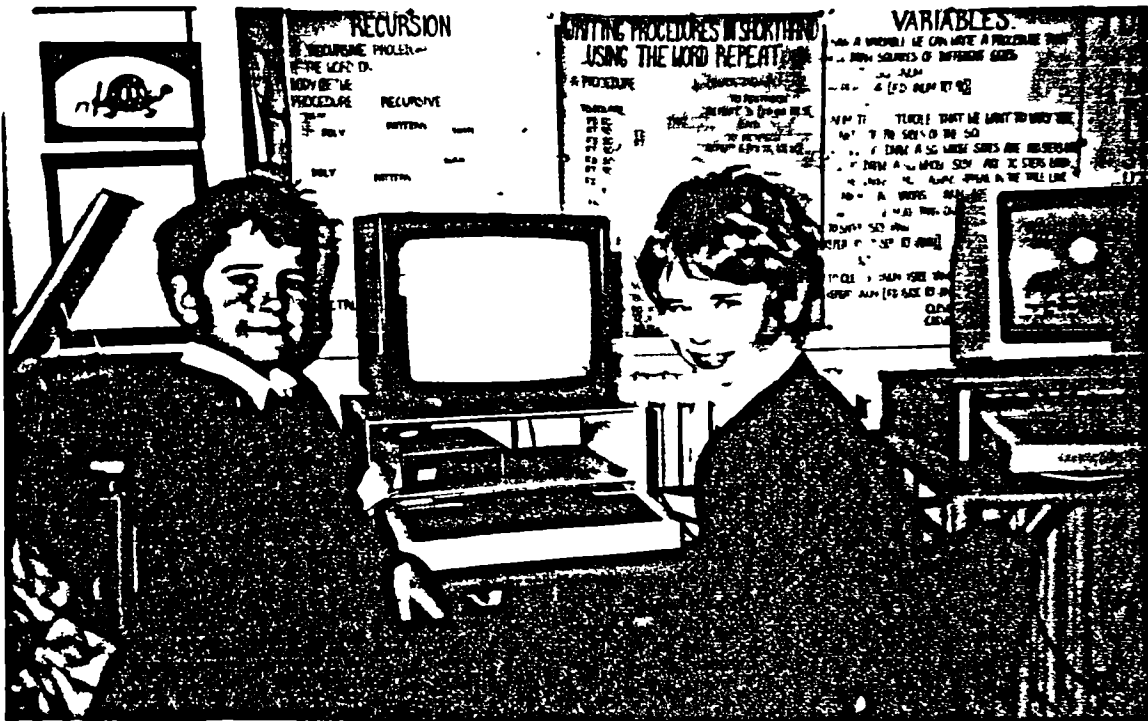
George and Norman
at work on their
SUB

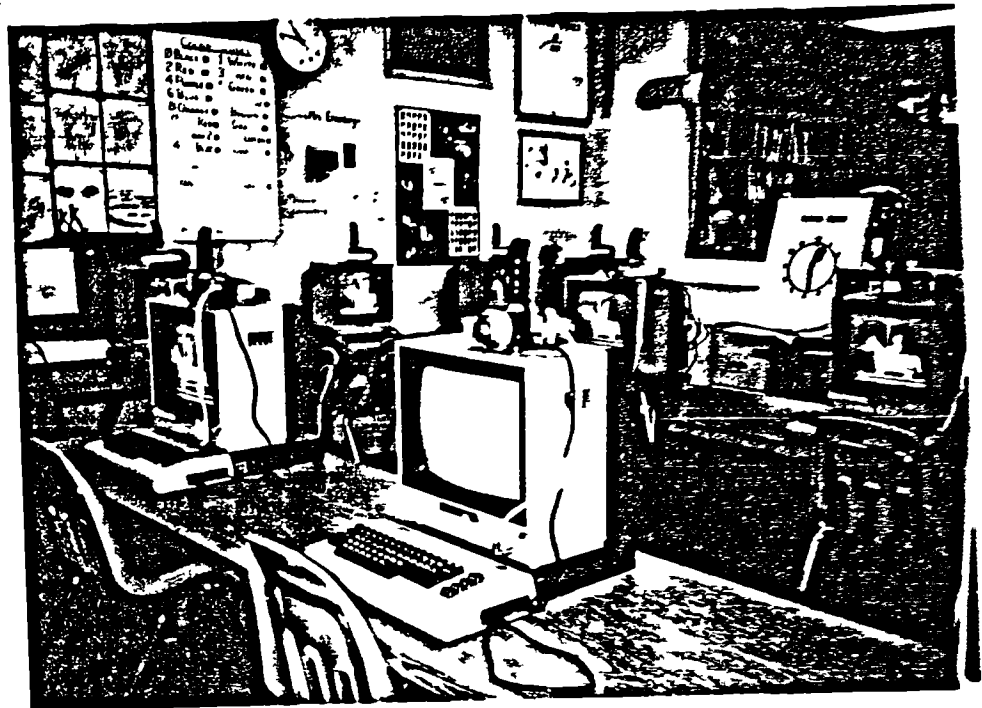Early days of Logo at Longsight, with the third year juniors
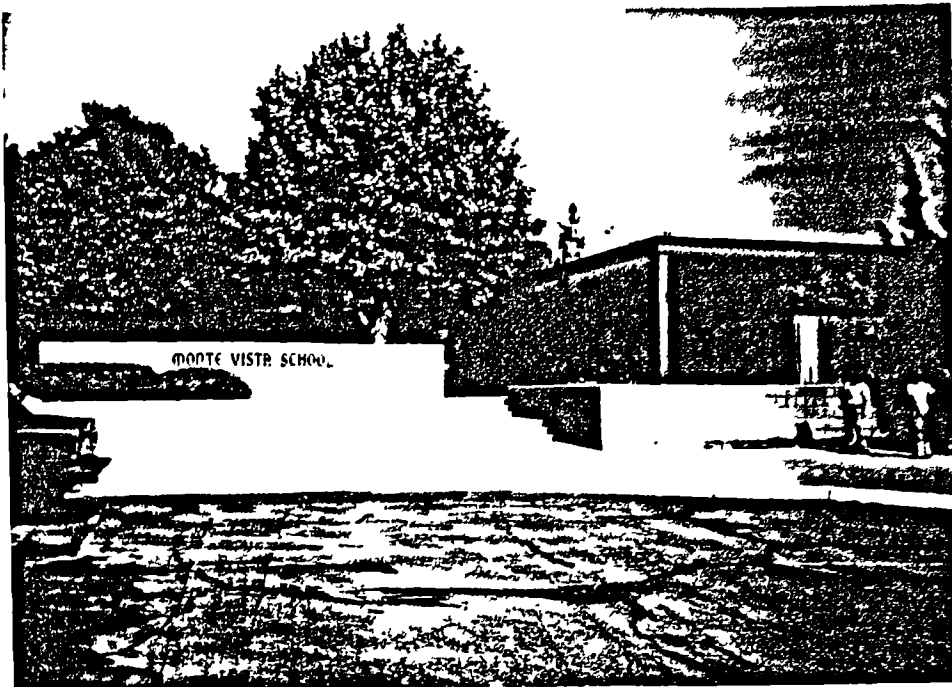
MONTE VISTA SCHOOL
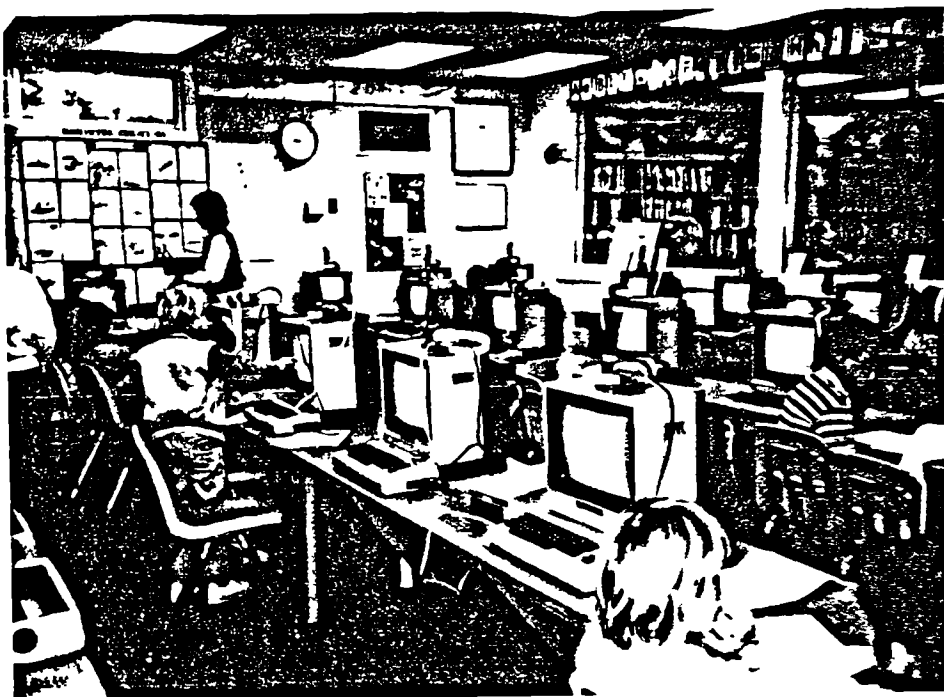
In the micro-lab

Using the
"Haunted House"
adventure program

All ready for
"Memory Castle"
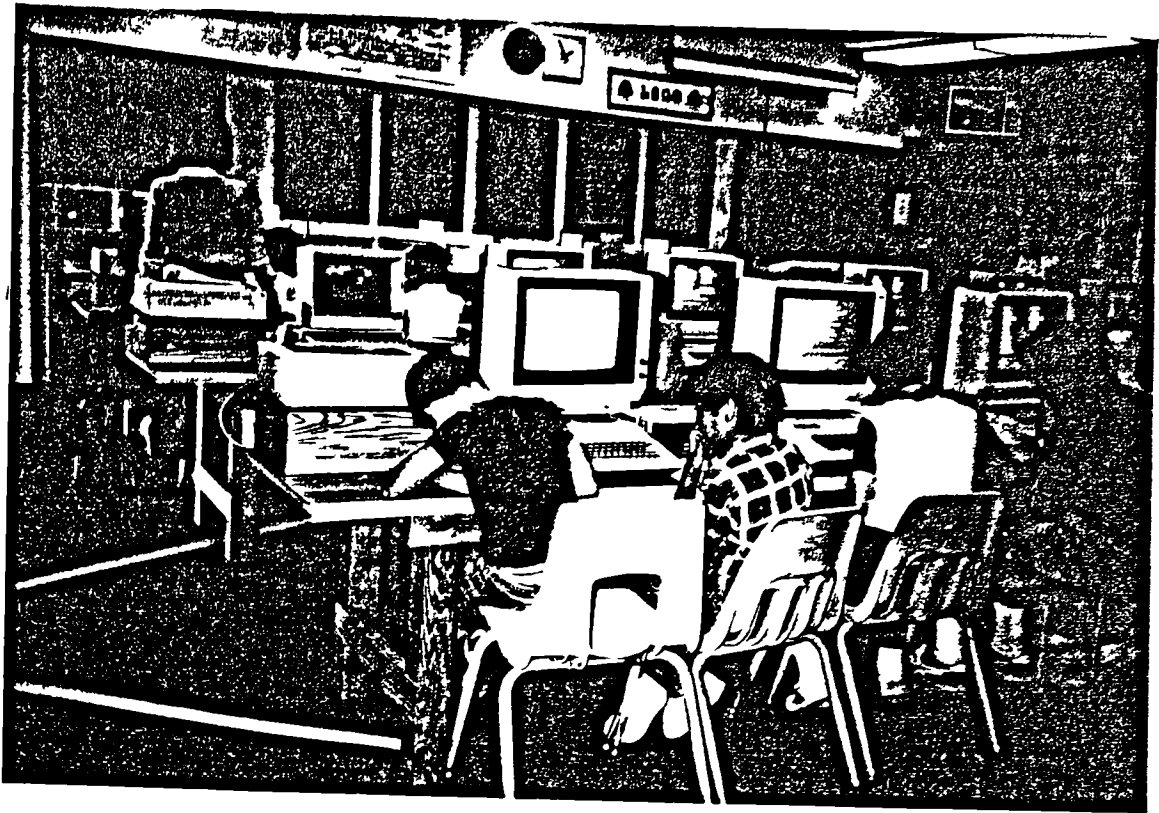

Using
"Memory Castle"

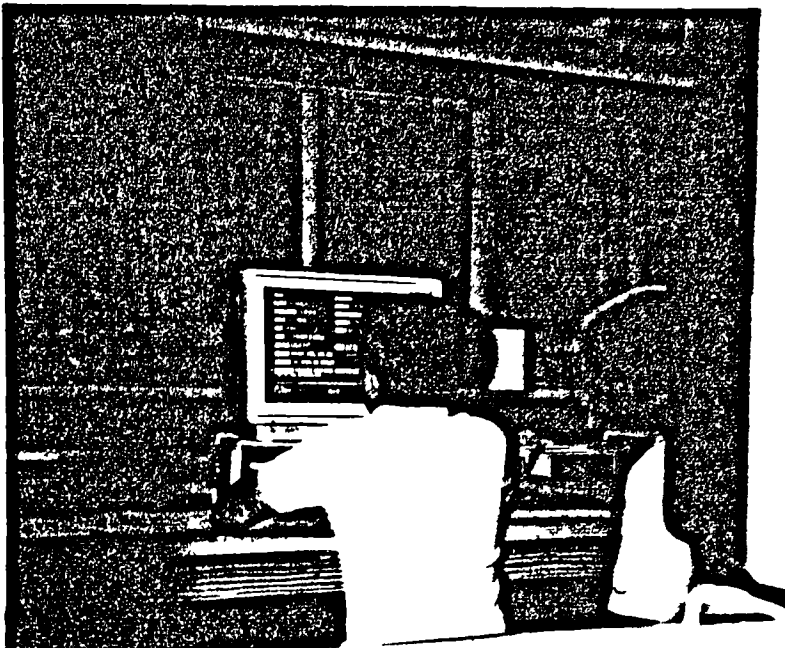Using
"Memory Castle"
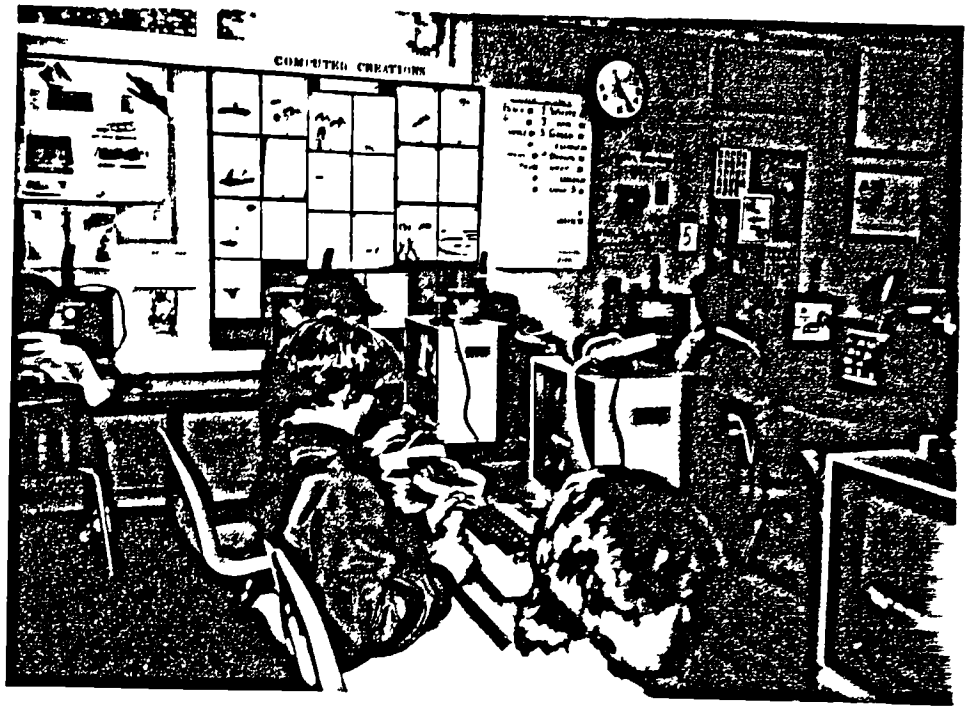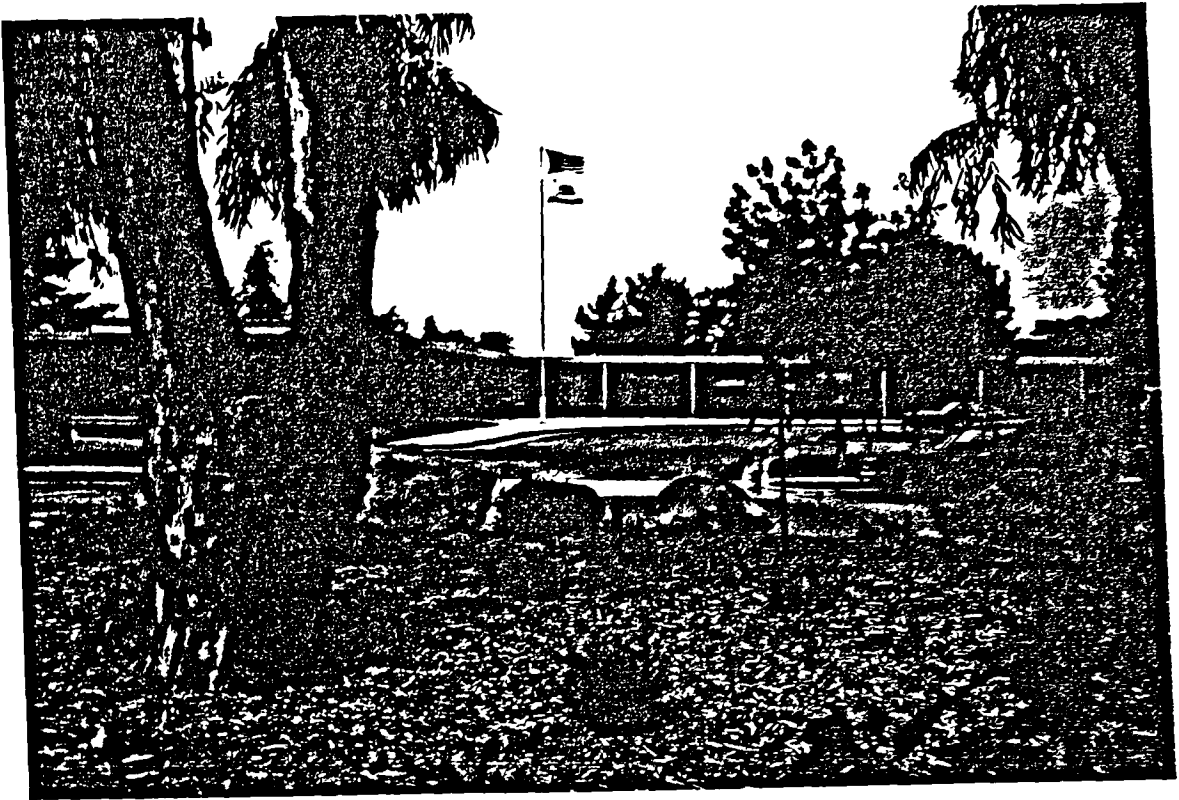
LA PATERA SCHOOL
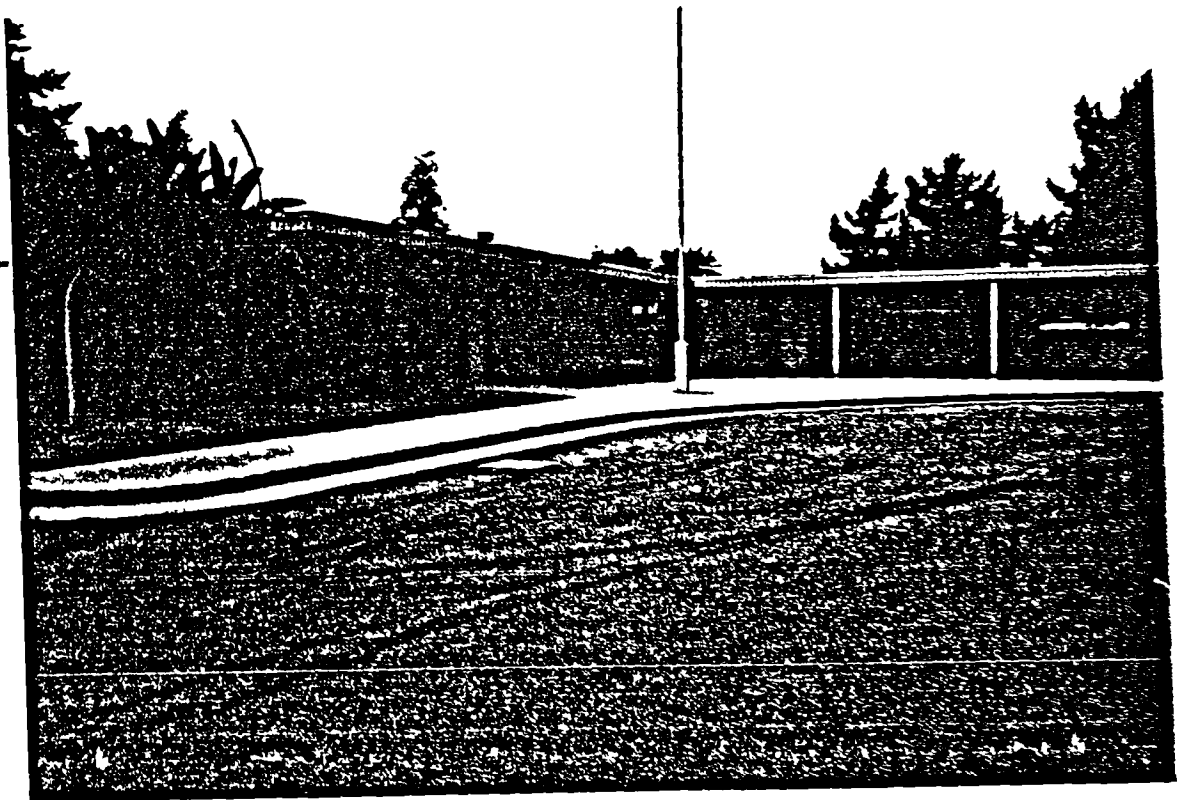
Displays
in the
micro-lab
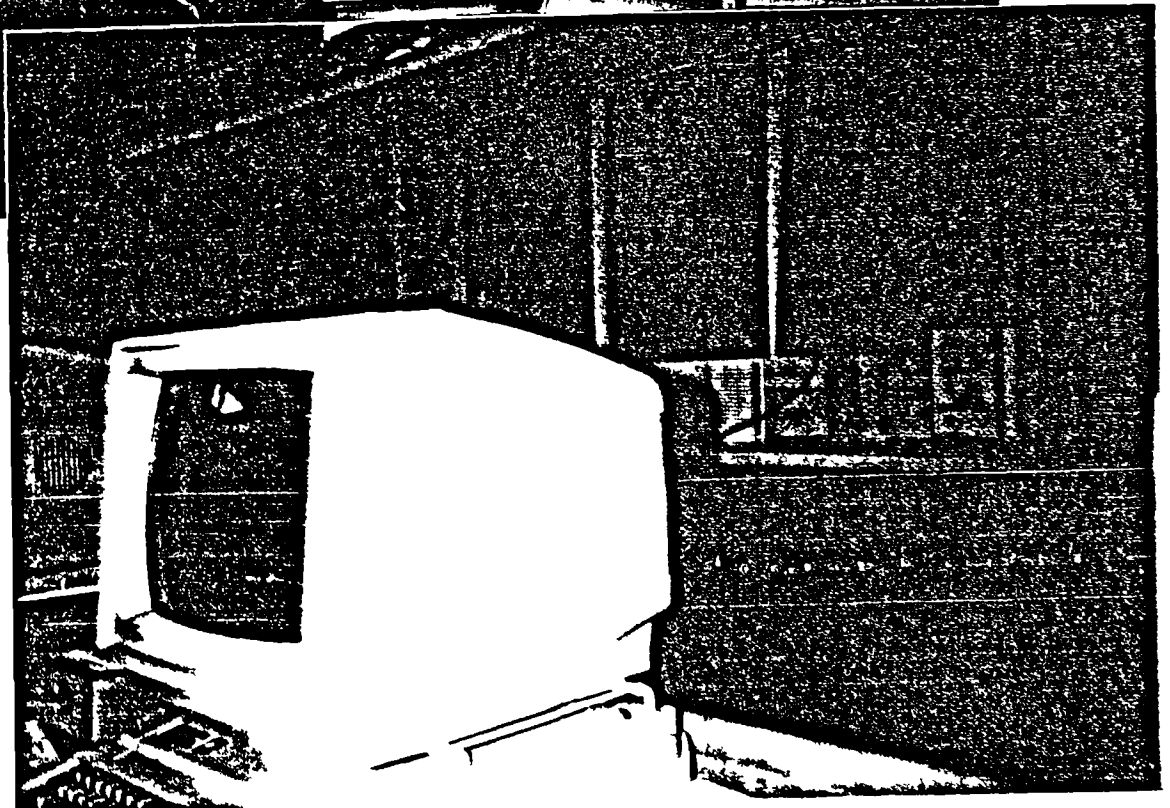
Using a database

Using a database

"Dazzle
Draw"-ing