

Readers of MICROMATH are presumably interested in using computers to support the learning of mathematics. But many teachers of mathematics still do not use computers, and **Dave Miller** has been looking at some of the reasons why.

Some in-service issues

Mathematics 5-16 and Will Mathematics Count? are two of the many publications that emphasise the important part that computers should play in the classrooms in the real world?

I had been using computers in mathematics for some time and had encouraged my staff to do likewise. At first the department had been the major users of the computer room, but then computer studies came along and negotiations were necessary. But we still kept our use to at least 5% (every class was time-tabled into the room at least once every four weeks).

However, this was not the case in other schools when, as a teacher trainer, I came to send out my methods students to undertake their teaching practice. What dismay when the school world does not reflect the training ideal! Had things changed that much in the months that I had been away from the classroom, or do schools have problems with the new technology? Micros and computer rooms were not easily accessible to my students (or even, more alarmingly, to mathematics departments). All my students did manage to use these facilities at least once, though this was usually through skilful negotiation on the part of the normal class teacher. So why did this happen? Was my choice of schools unfortunate, or is this a common occurrence?

I needed more information. Although not always the best method I sent a questionnaire to the Head of Mathematics of 30 local schools. (Ten randomly chosen from each of the neighbouring three countries). The questionnaire went to the schools in May 1988.

The questionnaire asked about the following:

- (i) computer equipment in school;
- (ii) its availability to the mathematics department;
- (iii) its current use;
- (iv) software use;
- (v) training needs of the department.

The replies to the questionnaire highlighted some of the current problems that are facing Heads of Mathematics as they attempt to help their staff to use computers in math-

ematics. The problem that staff have with access to computer rooms needs to be solved quickly. Second computer rooms may help to alleviate this particular problem.

Results from the Questionnaire

I received fifteen replies. Ten of the schools that replied had sixth forms.

All the schools have one computer room and there are normally between 13 and 16 computers in this room (only one school differed having only eight). One school already has a second computer room with six computers, and three of the rest are soon to get a second computer room.

"Approximately what percentage of time will a pupil spend using a Computer in Mathematics lessons?"

	0%	1-2%	3-4%	5-6%	Other
In years 1 to 5	5	4	1	4	1*
A level pupils	5	2	0	3	0
Retakes	8	0	0	2	0

* = 8% in first year only.

"Approximately what percentage of time will a pupil see a computer being used in Mathematics lessons (eg as an introduction to a lesson)?"

	0%	1-2%	3-4%	5-6%	Other
In years 1 to 5	6	2	2* =	2†	2£
A level pupils	6	2	0	1	2+
Retakes	9	0	0	0	1\diamond

* = in first year only, 2% all others.

† = in fourth and fifth year only, 2% all others.

£ = in one school first year only, 2% all others.

& = 50% all in one school, 25% all years in the other school.

+ = both 25%

\diamond = 25%

Ease of Access

"Please give details of the arrangements that are needed to use the computers in Mathematics in your school. Comment on the advantages (or problems) associated with this system."

Eight schools reported very little access available for mathematics and the following comments were made:

- No time when the room is available.
- Computer studies exclusive use.
- Computer studies and information technology only.
- Computer studies, information technology and office practice = 37/40.
- Very little time when computer studies not using the room.
- Impossible due to computer studies and information technology.
- Completely used by computer studies, information technology, the sixth.
- Computer studies, information technology and CPVE = 34/40.

Four schools had less severe access problems, given as follows:

- Booked when not used for computer appreciation.
- By arrangement with the computer studies staff.
- Advance booking and negotiation with computer staff.
- Over 50% use for computer studies, information technology and PSE the rest of the time is on a first come first served basis.

Three schools reported as below.

- Computer room is booked from the staff room.
- Next September (1988) there will be a week in hand booking system when wide access is expected.
- The computer room is seen as a resource room with the mathematics department as the main user.

Stand-Alone Machines

Four of the schools reported that stand-alone machines were used in mathematics lessons. However, this use was accounted for in the earlier replies.

Software Usage

Schools were asked to classify their stock of software by its use. The three classifications given were good use, little use and never used. The programs that get good use from more than one of the fifteen schools are *SMILE* (6 goods), *The Next 17* (5), *Logo* and *L* (both 3) and *Slimwami* (2). Will there be life after *SMILE*?

Training Implications

The comments received on training varied according to the needs of the different departments, with 14 of the schools responding to these questions. Training in the use of com-

puters was seen as a high priority by 6 schools, 8 schools required their training in school and 9 schools would want to look at what is currently available. While 7 schools felt that less than a week was sufficient, another 6 thought that a week or a fortnight was needed. The summer was the only preference named for time of year (by 6 schools).

Conclusions: The Way Forward

1. Questions that need to be asked at the school level must include:

Is the time devoted to Computer Studies, Information Technology and so on in the computer room really necessary?

Could this time be more effectively or efficiently used by other departments?

2. Mathematics staff need to see the advantages of being able to use computers in some of their lessons.

3. Mathematics staff must be happy using computers.

4. Adequate training of mathematics staff in the use of the computer as a teaching aid is essential.

5. Any training must involve the use of computers and the computer room. Powers that be must agree with this requirement, and consequently allow access to necessary equipment and rooms.

In response to the issues raised by the results of this questionnaire we have devised a special course that allows mathematics staff to develop their computer-related skills. This course is aimed at both individuals and whole departments and is usually based in the school of the participants. The course establishes a structure so that access to equipment can be negotiated within the school. It provides the impetus to allow staff to get started with computer related work and instils sufficient confidence to keep the initial momentum going.

It is important that energy is used so that all colleagues throughout the country can gain confidence and follow the lead taken by the many contributors to *Micromath*. ■

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1. *Mathematics 5-16*. Department of education and Science.
2. *Will Mathematics Count?* C.E.T.

The above is a summary of the report *A Survey into the Use of the Computer in School Mathematics*, available from D.J. Miller, Department of Education, University of Keele, Keele, Staffordshire, ST5 5BG for £1 inclusive.

The attached document has been downloaded or otherwise acquired from the website of the Association of Teachers of Mathematics (ATM) at www.atm.org.uk

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