Language and mathematics : A collection of articles by members of the Association of Teachers of Mathematics. 1980. Lancashire : Association of Teachers of Mathematics.

Although this little booklet was published a few years ago, its illuminating content deserves some attention. Various aspects of language in mathematics are examined in a series of brief articles.

The article 'Towards a language of struggle' explores the relationship between language and mathematics. The writer poses such similarities as:

> There is an aspect of doing mathematics which is more like writing a poem than it is like talking. When trying to write a poem, one struggles with the possibilities and consequences of particular phrases; when trying to work at a piece of mathematics, one struggles with possibilities and consequences of choosing certain signs, or a sign-system; in both cases, one is trying to capture awarenesses.
>
> The expressions of mathematics, like those of the poet, tend to be more exacting than those of every-day speech, for in both cases one has to struggle with the difficulites of one's medium, in order to achieve new clarities. The hoped-for outcome is a hard-won and particular realisation of awareness, expressed symbolically through the achievement of a fresh relationship within the sign systems used.

How shall we help the child to master the language of mathematics? By encouraging him to pursue his own speculations, using the language of struggle, out of which clarity is born, rather than 'muscling in with language of one's own.'

'Comments on language in the classroom' is an offering of thoughts on the use of language in the mathematics classroom. Here is one to whet your appetite:

> My own memory...of irritation with a teacher who spoke too much and interfered by doing so with my attempts to come to grips with something new reminds me that in the complexity of a situation in which learning takes place, an attempt by the teacher to be clear, definite and unambiguous may cause more damage than remaining silent.

The precision of the meaning of words used in classroom explanation is discussed in the article 'Thoughts on mathematics and language'. The writers suggest that three areas to consider are:

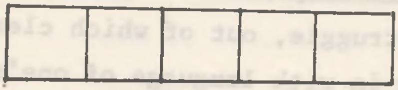
(i) formal mathematical language where non-ambiguity, definition and precision are expected;

(ii) language used by teachers to help children make connections of their own. This language is often free, colloquial and ambiguous - involving itself with the struggle for meaning;

(iii) language used by children when working with each other, chewing over the ideas or simply gossiping as they 'do their sums'.

The difficulties of preserving precision and non-ambiguity are illustrated in this incident:

> I held up five Unifix cubes.
> 'How many have I got?'



'Five,' they said. And in the same breath, almost, 'If you break off two you've got three.'

I paused, slightly taken aback. Then I broke off two, and I held two in one hand and three in the other.

'How many have I got?' I asked.

'Three.'

'But I've still got five,' I said with a puzzled frown.

'And if you break off another one, you've only got two,' they continued, ignoring me.

I broke off another one, and held up the result.

'I've *still* got five,' I said.
I put them back together again.

'If you take two, how many will you have?'

'Three.'

'Take two then.' One child did so. 'How many have you got?'

'Three.'

'But *I've* got three. How many have *you* got?'

I tried the last one on their teacher, who had just walked in, and she gave me the same answer!

...what seems to have happened to the six-year-olds described above is that everyday words have become technical, not so much in a mathematical sense as a mathematician would recognise them but in a pedagogical sense, so that <u>in the classroom</u> 'break off' and 'take' are synonomous with 'subtract' and 'got' refers to the result of some computation.

So, perhaps a word can be reinterpreted and be locally more precise by agreement of the users. Would you say then that 'got' was used correctly by the children - if not the writers?

MARY GROEN

DAWE, Lloyd. Bilingualism and mathematical reasoning in English as a second language, <u>Educational studies in mathematics</u>, vol 14, no 4, November 1983, pp 325 -353.

In this article Lloyd Dawe reports the results of a comparative study of the relative mathematical competence of bilingual Italian, Punjabi, and Jamaican children learning through the medium of English. His study offers considerable suport for the view that first language competence is a crucial factor in a child's ability to