

The Big Picture 2

Materials and Resources for ESOL Tutors



Guidelines for the ESOL classroom

Appendix 1

Numeracy - Some Guidelines for the ESOL classroom

Learning mathematics requires a level of language that second language learners may not yet have acquired. While second language learners may pick up oral (everyday) proficiency in their new language in a relatively short time, it may take a number of years to acquire the de-contextualised language skills needed to function successfully in an all-English classroom.

Although mathematical concepts are common to many languages and cultures, these concepts must be learned and expressed through particular languages. Where as '3 + 3 = 6' may be widely understood, the English expression 'three plus three equals six' is not. In the numeracy classroom learners have to cope with the new vocabulary of mathematics, as well as the new language in which the numeracy is being taught.

The 'language' of mathematics used in the classroom is communicated through:

- The use of particular words for mathematical ends (This 'register of mathematics' does not only include technical vocabulary but also words, phrases and methods of arguing within a given situation conveyed through the use of natural language).
- The spoken language of the mathematical classroom (both tutor and learners)
- The language of texts
- The language of written symbolic form.

In the numeracy classroom a number of words are used that have been 'borrowed' from everyday English. These words tend to be ambiguous due to having one meaning in mathematics and another meaning in everyday day language. Such words include for example 'mean', 'natural', 'power', 'difference', takeaway. The non-mathematical meanings of these terms can influence mathematical understanding as well as causing confusion.

Words can also change their meaning depending on the context in which they are used. The need to infer meanings from context e.g. 'the sum of five and six', 'the sum I couldn't understand'.

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A lack of common understanding of the meaning of words and symbols means a chance of communication failure. If the learner's cannot understand either the language of the tutor or the meanings of certain words/phrases then they will not be able to participate and learn numeracy effectively. Sometimes learners are regarded as lacking in mathematical ability when they are actually experiencing problems with the formal language of the numeracy classroom.

Within different countries conventions exist to write and do things in mathematics in certain ways, for example the conversion from miles to kilometres in Ireland.

The unit of measure of an American 'ton' weight is different to the European measure the 'metric tonne'. There are also conventions around the way we use symbols.

For example in Ireland the sum seven multiplied by four is symbolised as 7×4 . In other countries the same sum would be written as 7.4 , the symbol 'x' is not used replaced instead by the decimal point. There is also a variation in the world's languages in the use of the comma and the decimal point for writing numbers greater than a thousand and in writing numbers as decimals. The number twenty thousand five hundred and sixty would be written as 20,560 in Ireland but as 20.560 in most non English speaking countries. Although in Ireland nine point four is written as 9.4, in many countries the decimal point is replaced by a comma and would be written as 9,4. Another common difference is the method of writing long division, e.g. if 14 people are sharing a restaurant bill of €62.60 equally there are a number of ways to do the division.

$$14 \overline{)62.60}$$

$$62.60 \overline{)14}$$

$$62.60 : 14 =$$

Writing the sum in any of these ways is not backwards, it is simply another way of symbolising the operation of long division. Tutors should observe how learners approach particular tasks and build on that. Adult ESOL learners may ask to learn a 'new' (to the individual) way so that they may help their children in school.

English as a language does not have strong support structures for learning number and number sense, e.g. eleven does not indicate in any way that it comprises of 10 and 1. Consequently the language for numbers and their value need to be constantly reinforced in the early stages of language acquisition.

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Good Practice

- Encourage students to work mathematically in whatever language they wish to use. Recognise bilingualism to be of positive value rather than a problem. Groups can be discussing in a language with which the tutor need not be familiar. That is not a problem provided that at some stage the students present their ideas and results to the tutor and the class in English.
- Tutors should observe and build on the strategies that ESOL learners use.
- Determine whether a learner has difficulty due to unfamiliarity with conventions or conceptual
- Keep alert to ambiguities of words and symbols
- Make learners aware when conventions are being used
- Correct and, if written, make sense when read aloud
- The language you use is phrased in ways appropriate for the learners
- Your communication actually reaches learners
- Help learners develop their technical mathematics vocabulary.