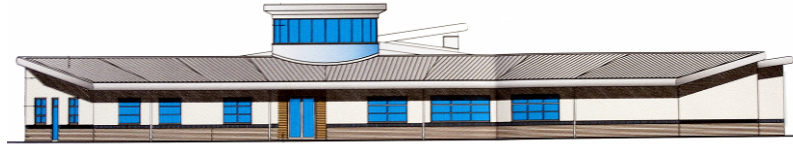


# **WINDLESTONE SCHOOL**



## **KEY SKILLS**

## **NUMERACY STRATEGY**



# WINDLESTONE SCHOOL

## NUMERACY STRATEGY

### PREFACE

Numeracy was established as a topic of importance by the publication of the Cockcroft Report (Mathematics Counts) in 1982. It emphasised the role of mathematics as a service subject for other curricular areas and as an important functional skill for life after school. It also suggested a role for numeracy to be taught not just in mathematics lessons but as a whole school responsibility. The Technical and Vocational Education Initiative (TVEI) of the 1980s attempted to 'connect' mathematics to both cross curricular issues and to the world of work, but it was not until the National Numeracy Strategy in 1998 that a coherent policy took shape.

### INTRODUCTION

Since the creation of the National Numeracy Strategy in 1998 and consequent Key Stage 3 National Strategy, there has effectively been no real distinction between mathematics and numeracy. This is especially the case at National Curriculum Levels up to 6 at which the overwhelming majority of students at Windlestone operate.

A definition would emphasise:

- the ability to apply number skills, measurement, data handling, and spatial skills in a variety of contexts related to other areas of the curriculum and the real world, and
- a confidence, competence and familiarity, an 'at home ness' with number at a more abstract level.

It is therefore about much more than knowing how to perform numerical operations. It is about an inclination and ability to solve problems using a variety of formal and informal techniques, and a depth of understanding about the way in which data may be collected and information presented. It is about making sense of the world through our understanding of number and its applications.

Numeracy has become particularly important as a Key Skill from the 1990s as research has indicated that poor Numeracy skills have become a greater barrier to employment opportunity than poor literacy. As such, it deserves a high priority within the Windlestone curriculum together with Literacy and ICT, but alongside other generic and transferable core skills including:

- Improving own learning and performance
- Problem solving
- Working with others

The Key Stage 3 Strategy suggests that by Year 9 students should:

- have a sense of the size of a number and where it fits into the number system;
- recall mathematical facts confidently;
- calculate accurately and efficiently, mentally and pencil and paper methods;
- use proportional reasoning to simplify and solve problems;
- use calculators and other ICT appropriately and effectively;
- use simple formulae and substitute numbers in them;

- measure and estimate, choosing suitable units, and reading numbers from meters, dials and scales;
- calculate simple perimeters, areas, and volumes;
- understand and use measures of time and speed, and rates such as £ per hour;
- draw plane figures to given specs and appreciate concept of scale in drawing and maps;
- understand mean, median and mode and purposes of each;
- collect data, discrete and continuous, and draw, interpret and predict from graphs, diagrams, charts and tables;
- have understanding of measurement of probability and risk;
- explain methods and justify reasoning And conclusions, using correct mathematical terms;
- judge reasonableness of solutions and check when necessary; and
- give results to appropriate degree of accuracy.

This list is included to give an idea of the *range* of knowledge, skills and concepts included. Clearly care should be taken to take account of the actual *level* of mathematical understanding we can expect of individual students.

## **RATIONALE**

This strategy for Windlestone has two main principles.

### *Connectedness:*

The breaking down of some of the barriers between subjects, enabling students to make links and apply knowledge and skills acquired in one area to another area.

### *Shared Responsibility:*

Just as we all accept responsibility for behaviour, so there are other areas that belong to us all and attending to these areas does not ‘take away’ from our normal subject lessons. Numeracy is one of these areas. Staff and students need to think of numeracy as something that happens in all subjects, because that is where it happens in real life.

Numeracy skills are used throughout the school curriculum and are important in accessing Further Education, training, work, home life and leisure activities. The following examples illustrate the importance of numeracy to other subjects:

Art	Symmetry, Shape, and Spatial awareness,
English	Understanding information presented in tables etc
Design Technology	Measurement, shape, area, volume, estimation, costing
Food technology	Measurement, weight, estimation, ratio, costing
Geography	Scale factors, length, area, space, collection of data, displaying information
History	Time, sequencing, displaying information, graphs
ICT	Representing data, applying formulae to spreadsheets

Music	Counting, fractions, sequencing, pre-algebra (patterns)
PE	Measurement, timing, collecting data, displaying information
RE	Collecting data, interpreting sources ( tables, graphs etc)
PSHE	Collecting data, displaying information, interpreting sources
Rural Science	Measurement, weight, volume, length, time
Science	Measurement, reading scales on instruments, collecting data, formulae, numerical operations, displaying information,

## SCOPE

Ensuring all students at Windlestone are numerate is one of the most important curricular responsibilities of the school. It is essential to the achievement of this goal that all staff working with students accept devolved responsibility for this and that all subjects' curricular planning specify the ways in which Numeracy may be addressed within that subject.

All teachers should ensure that students have regular opportunities to apply, consolidate and develop their numeracy skills in a variety of relevant and appropriate contexts.

## AIMS

The aims of the Windlestone Numeracy Strategy are to:

- maintain and improve standards of Numeracy across the school;
- ensure consistency of approach across the school, including vocabulary and notation;
- indicate areas for collaboration between subjects;
- promote 'connectedness'...the transferability of knowledge, skills and concepts across subjects; and
- emphasise the importance of these elements of Numeracy to life after school, especially so in Key Stage 4.

## IMPLEMENTATION

Numeracy should become a resource for all subjects and not the property of staff teaching Mathematics. It is therefore important that a high level of communication and sharing of information takes place between colleagues to take advantage of this opportunity.

Teachers of Mathematics should:

- be aware of the curricular demands of other subjects, and the mathematical knowledge, skills and concepts that are most likely to be used in each subject;

- try to ensure students are equipped with appropriate numeracy skills by the time they are needed in other subjects;
- provide information to other teachers on appropriate expectations for students, including any areas of difficulty;
- use examples and contexts drawn from other subjects as exemplar and illustrative material for mathematical questions.

Teachers of subjects other than Mathematics should:

- promote a 'pro-Numeracy' culture and attitude in the classroom ( A teacher saying, for instance, 'I was never any good at maths' is highly damaging);
- ensure they are familiar with the language, notation, conventions, and techniques of mathematics, as they relate to their subject, and encourage students to use these correctly;
- be aware that there is very rarely a single 'best' or 'approved' method, and encourage students to experiment;
- provide information to numeracy co-ordinator on the stage at which specific numeracy skills will be required for particular groups; and
- provide resources to mathematics teachers, including ideas, for them to build these curricular applications into mathematics lessons.

The above will be achieved only through effective liaison and communication between teachers. This communication needs to address the following issues:

- the rationale and approach to calculation, for instance the use of mental and informal methods;
- the expectation that mental methods are a first resort for simpler ( i.e. 2 digit) additions and subtractions;
- when the use of calculators is considered appropriate;
- the use of, and abbreviated notation of, units;
- correct mathematical notation and terms to be used;
- algebraic and other mathematical techniques;
- how graphs are to be represented; and
- how and when ICT resources will be used to support mathematics and other subjects.

This process will be implemented and managed by the Key Skills Coordinator.

### *Target Setting, Assessment, Recording and Reporting*

The implementation and use of numeracy targets in IEPs is considered to be a useful method in enabling students to make progress across the curriculum and to understand that numeracy is integral to parts of all lessons not just Mathematics.

This target is initially suggested by the student's mathematics teacher then given to teachers to accept or agree an amended version. This part of the process is very important, as all subject staff need to feel that they have ownership of the target and that the target can be built into their lessons. It is clear that it is not always possible to give a target that is both SMART and sufficiently open to have a relevance across all subjects. In termly IEP Review Meetings the students are presented with their targets which are explained to them.

Students should be presented with the opportunity to meet their target on a number of occasions in each subject throughout the currency of that target. Subject teachers are responsible for the provision of these opportunities within their subjects and the assessment and recording of the outcomes. These assessments become formalised into the termly ROA1 and Report to Parents.

### **REVIEW**

This strategy will be regularly reviewed.

C Richardson  
Latest Revision June 2006

CR June 2006