

Numeracy and Mathematics across the curriculum Policy

PREAMBLE

Mathematics contributes to and draws from many subjects and aspects of the curriculum. Pupils can be helped to appreciate the importance of mathematics in their lives by making these links explicit. For example, if it is known how mathematics is applied in other subjects and colleagues are asked to exemplify applications for use in mathematics lessons, it will be possible to provide examples and contexts which pupils know and understand. As such, mathematics becomes a key-skill in the curriculum and also a life skill.

Aims:

- to enhance standards in mathematics across the curriculum;
- to enhance standards in aspects of subjects where mathematics is a major contributor;
- to enable students to transfer mathematics skills across subject areas;
- to ensure a consistency of approach and progression in the use and application of mathematics across the curriculum;
- to increase awareness amongst teachers of the contribution that mathematics can make to each curriculum area and vice versa;
- to help pupils appreciate the importance of mathematics in their lives;
- to enable pupils to understand and apply mathematics in the context of other subjects that they study.

POLICY

Every subject makes a contribution to mathematics across the curriculum because they all use some aspects of mathematics. However, certain subjects use mathematics, on a day-to-day basis, more than others. These subjects are design and technology, geography, information technology and science. We will refer to them as 'major users', the other subjects being known as 'minor users'.

For the major users, the following table identifies the most important aspects of mathematics encountered.

<ul style="list-style-type: none"> • <i>Averages, measures of spread,</i> • Area and volume • Calculation techniques • Co-ordinates: <ul style="list-style-type: none"> ✓ 3D (CAD/CAM); ✓ geography. • <i>Estimation.</i> • <i>Formulae:</i> <ul style="list-style-type: none"> ✓ <i>triangle representation;</i> ✓ <i>use of words and symbols</i> • <i>Graphs:</i> <ul style="list-style-type: none"> ✓ <i>bar graphs;</i> ✓ <i>pie charts;</i> ✓ <i>pictograms;</i> ✓ <i>scatter graphs;</i> ✓ <i>histograms;</i> ✓ <i>line graphs;</i> ✓ <i>algebraic graphs.</i> • <i>Measuring:</i> <ul style="list-style-type: none"> ✓ <i>units;</i> ✓ <i>prefixes (e.g. pico, nano,etc)</i> 	<ul style="list-style-type: none"> • Negative numbers • <i>Proportions:</i> <ul style="list-style-type: none"> ✓ <i>fractions;</i> ✓ <i>percentages;</i> ✓ <i>decimals;</i> ✓ <i>ratio and scales.</i> • Shape and space: <ul style="list-style-type: none"> ✓ nets; ✓ symmetry; ✓ tessellation; ✓ transformations. • <i>Surveys and data capture.</i> • <i>Tables of data:</i> <ul style="list-style-type: none"> ✓ <i>constructing;</i> ✓ <i>reading;</i> ✓ <i>interpretation.</i> • Trial and improvement
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Aspects common to ALL major users are indicated in bold italics.

PROCEDURES

Departments must, where possible, agree to consistent approach with the following: -

- use of units;
- mathematical notation and terminology to be used;
- algebraic and other mathematical techniques. For example, how to simplify algebraic expressions or solve equations;
- how graphs are to be presented and used;
- how and when ICT resources, such as graph plotters or graphical calculators, will be used to support mathematics.

Role of departments:

All departments will ensure that the aspects of mathematics identified in the audit are clearly signposted in their schemes of work. In addition, the role of the mathematics department is important:

- in using subject-specific examples for teaching and learning activities;
- each member of the maths department meets termly with their assigned department.
- in sharing flexible methods of calculation;
- by agreeing terminology and conventions.

Good liaison should help to ensure that all staff use common approaches, that mirror those used by the department that teaches a particular topic first. Where possible approaches to calculations should be the same in all subjects. If a common approach is not possible then it is important that the class teachers makes pupils aware of how a particular topic is taught in other subjects. All teachers will need to know about:

- the use of mental and informal written methods, especially with lower attaining pupils;
- how and when calculators should be used.

Monitoring:

The effectiveness of this policy, as a working document, must be evaluated over time. Suitable success criteria might be:

1. More teachers are aware of developments in mathematics and numeracy across all key stages.
2. Awareness and confidence levels of teachers raised about the use of mathematics in their own subject(s).
3. More teachers plan effectively for mathematics in their own subject(s).
4. Increased liaison between mathematics department and other departments about strategies for teaching mathematics, times when mathematical topics are taught and subject-specific examples for use in mathematics lessons.
5. A higher proportion of pupils are aware of the mathematics used in other subjects.
6. A higher proportion of pupils are aware of the usefulness of mathematics in other subjects.

Measurement of the success criteria can be made using the pupil and teacher attitude questionnaires.