



Idsall Numeracy Policy

Sponsorship & Review

1 Sponsor

Mr C Russell, Numeracy Coordinator

2 Written & Approved

January 2017 (Updated June 2017)

3 Next Review Date

January 2020

‘Great oaks from little acorns grow.’



Numeracy Policy

1. Introduction

1.1 Idsall School is committed to raising the standards of numeracy of all of its students, so that they develop the ability to use numeracy skills effectively in all areas of the curriculum and the skills necessary to cope confidently with the demands of further education, employment and adult life.

2. A Definition of Numeracy

2.1 Numeracy is a proficiency that is developed mainly in Mathematics but also in other subject areas. It is more than an ability to do basic arithmetic. It involves developing confidence and competence with numbers and measures. It requires understanding of the number system, a repertoire of mathematical techniques, and an inclination and ability to solve quantitative or spatial problems in a range of contexts. Numeracy also demands understanding of the ways in which data are gathered by counting and measuring, and presented in graphs, diagrams, charts and tables.

2.2 A numerate student is able to:

- 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, both mentally and with pencil and paper, drawing on a range of calculation strategies;
- Use proportional reasoning to simplify and solve problems;
- Use calculators and other ICT resources appropriately and effectively to solve mathematical problems, and select from the display the number of figures appropriate to the context of a calculation;
- Use simple formulae and substitute numbers in them;
- Measure and estimate measurements, choosing suitable units, and reading numbers correctly from a range of meters, dials and scales;
- Calculate simple perimeters, areas and volumes, recognising the degree of accuracy that can be achieved;
- Understand and use measures of time and speed, and rates such as £ per hour or miles per litre;
- Draw plane figures to given specifications and appreciate the concept of scale in geometrical drawings and maps;
- Understand the difference between the mean, median, mode and range, and the purpose for which each is used;
- Collect data, discrete and continuous, and draw, interpret and predict from graphs, diagrams, charts and tables;

- Have some understanding of the measurement of probability and risk;
- Explain methods and justify reasoning and conclusions, using correct mathematical terms;
- Judge the reasonableness of solutions and check them when necessary;
- Give results to a degree of accuracy appropriate to the context.

3. The Management of the Numeracy Policy

3.1 The role of the Senior Management Team is to:

- Participate in the planning, implementation and evaluation of the whole school numeracy strategy;
- Determine the role of the Numeracy Coordinator;
- Specify expectations to be made of all teachers;
- Support the development and implementation of a whole school numeracy policy;
- Provide INSET resources for Mathematics teachers and other teachers in the school;
- Provide opportunities for effective communication between the Numeracy Coordinator, the Senior Management Team, the Mathematics Department and other departments;
- Provide finance for material resources;
- Support and encourage staff involved in the project.

3.2 The role of the Numeracy Coordinator is to:

- Work with the Senior Management Team to determine a strategy for dealing with numeracy across the curriculum and to ensure the effective development and implementation of a whole school numeracy policy;
- Establish lines of communication and ensure that there is constructive liaison between the Mathematics teachers and teachers of other subjects;
- Establish lines of communication and ensure that there is constructive liaison between the Mathematics teachers and feeder primary schools;
- Monitor the implementation of the whole school numeracy strategy;
- Evaluate the effectiveness of the strategy and make modifications where necessary;
- Facilitate amendments to the numeracy strategy in the light of evaluation and curriculum changes.

3.3 The role of the Mathematics teacher is to:

- Be aware of the mathematical techniques used in other subjects and provide assistance and advice to other departments, so that a correct and consistent approach is used in all subjects;
- Provide information to other subject teachers on appropriate expectations of students and difficulties likely to be experienced in various age and ability groups;
- Through liaison with other teachers, attempt to ensure that students have appropriate numeracy skills by the time they are needed for work in other subject areas;
- Seek opportunities to use topics from other subjects in Mathematics lessons.

3.4 The role of other subject teachers is to:

- Ensure that they are familiar with correct mathematical language, notation, conventions and techniques relating to their own subject, and encourage students to use these correctly;
- Be aware of appropriate expectations of students and difficulties that might be experienced with numeracy skills;
- Provide information for Mathematics teachers on the stage at which specific numeracy skills will be required for particular groups;
- Provide resources for Mathematics teachers to enable them to use examples of applications of numeracy relating to other subjects in Mathematics lessons.

4. Teaching and Learning

4.1 Recommended strategies that are employed to effectively deliver numeracy across the curriculum promote teaching that is:

- Informed by clear, challenging and progressive objectives;
- Direct and explicit;
- Highly interactive;
- Inspiring and motivating;
- Varied in style and distinguished by a fast pace and strong focus;
- Well-pitched to pupils' needs;
- Inclusive and ambitious.

4.2 The aim is to promote learning that is:

- Active and highly-motivated;
- Purposeful;
- Creative and imaginative;
- Reflective;
- Secured in use and meaningful in context;
- Increasingly independent;
- Tailored to personal or group targets.

5. Planning and Assessment of Lessons

5.1 Lesson planning should:

- Ensure coverage and progression across the key stages;
- Ensure inclusion and differentiation;
- Ensure the transference of numeracy skills across the curriculum.

5.2 Assessment of lessons should:

- Inform future planning;
- Inform student target-setting.

6. Evaluation of Numeracy Strategies

The strategies employed are to be monitored and reviewed through:

- The school and departmental development plans;
- Lesson observations;
- Sampling of students' work;
- Discussions with staff, parents and governors;
- Reviewing of planning;
- Analysing assessment data;
- Discussions of specific students or teaching groups.

7. Areas of Collaboration

7.1 Mental Arithmetic Techniques

Students need to be able to tackle the same questions with a variety of methods. These approaches rely on mixing skills, ideas and facts; this is done by pupils drawing on their personal preferences and the particular question. All departments should give every encouragement to students using mental techniques but must also ensure that they are guided towards efficient methods and do not attempt convoluted mental techniques when a written or calculator method is required.

(All Methods for calculations are shown in Calculations Policy).

7.2 Written Calculations

Emphasis needs to be made of standard and non-standard methods of calculation, particularly for grid multiplication and division by chunking. The aim is for students to find the most efficient methods of calculation through a cohesive and full understanding of the situation.

7.3 Role and Use of Calculators

All departments are expected to apply consistent practice on the use of calculators. Consideration of these questions, and the policy below, will help them with this:

- Where in your subject do you expect pupils to be able to use a calculator?
- Are there, and should there be, situations in your subject when you would not want pupils to use calculators?
- Are the calculator skills required of pupils in line with expectations in the teaching of Mathematics?

The preferred calculator is the CASIO FX-85.

7.4 Vocabulary

The following are all important aspects of helping pupils with the technical vocabulary of Mathematics:

- Use of 'word walls';
- Using a variety of words that have the same meaning, e.g. add, plus, sum;
- Encouraging pupils to be less dependent on simple words, e.g. exposing them to the word 'multiply' as a replacement for 'times';
- Discussion about words that have different meanings in Mathematics from everyday life, e.g. 'take away', 'volume', 'product', etc;
- Highlighting word sources, e.g. 'quad' means 'four', 'lateral' means 'side', so that pupils can use them to help remember meanings. This applies to both prefixes and suffixes to words.

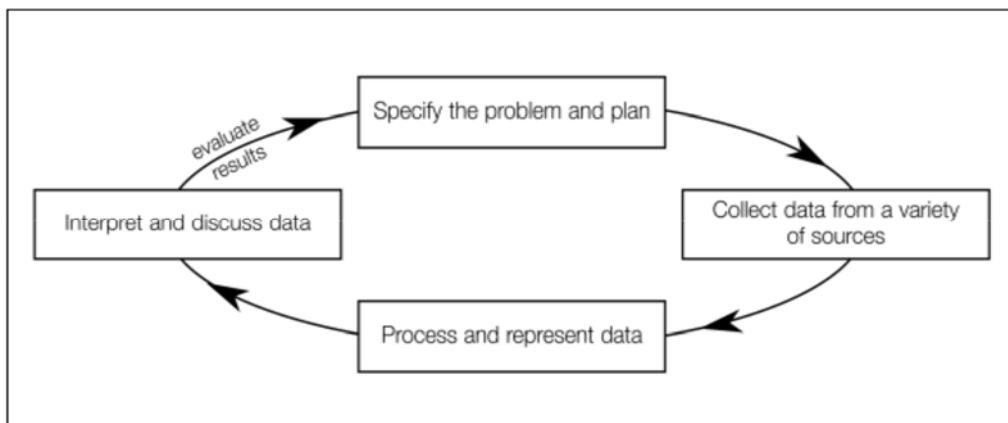
Students should become confident that they know what a word means so that they can follow the instructions in a given question or interpret a mathematical problem. For example, a student reading a question including the word 'perimeter' should immediately recall what that is and start to think about the concept rather than struggling with the word, wondering what it means and then losing confidence in their ability to answer the question.

7.5 Measures

Knowledge and the use of a range of scales for measurement should be developed to allow the transfer of skills across departments. For example, the ability to use all the divisions of a metre confidently, converting between them and, most importantly, having a sense of the relative size of them and visualising what a particular dimension looks like.

7.6 Handling Data

The use of the four-stage data-handling cycle should be encouraged across all departments in the school:



8. Whole School Policy on the Use of Calculators

The school expects all students to bring their own scientific calculator to lessons when required. In deciding when pupils use a calculator in lessons, teachers should ensure that:

- Students' first resort should be mental methods when appropriate;
- Students have sufficient understanding of the calculation to decide the most appropriate method, e.g. mental, pencil and paper or calculator;
- Students have the technical skills required to use the basic facilities of a calculator constructively and efficiently, to decide the order in which to use keys, to know how to enter numbers such as money, measures, fractions, etc;
- Students understand the four arithmetical operations and recognise which to use to solve a particular problem;
- When using a calculator, students are aware of the processes required and are able to say whether their answer is reasonable;
- Students can interpret the calculator display in context, e.g. 5.3 is £5.30 in money calculations;
- Students use the correct order of operations (using BIDMAS), especially in multi-step calculations, e.g. $(3.2 - 1.65) \times (15.6 - 5.77)$.

9. Transfer of Skills

9.1 It is vital that as the skills are taught, the applications are mentioned and as the applications are taught, the skills are revisited.

9.2 The Mathematics Department is to deliver the National Curriculum knowledge, skills and understanding using direct interactive teaching. Mathematics teachers are to make reference to the applications of Mathematics in other subject areas and provide relevant examples that give context to many topics. Other curriculum departments are to build on this knowledge and help students to apply these associated skills competently in a variety of situations. Liaison between curriculum areas is vital to ensure students develop confidence with this transfer of skills.

9.3 The transfer of skills between curriculum areas is something that many students find difficult. It is essential to reinforce a premise that ensures that students realise it is the same skill that is being used. It is vital to avoid situations where approaches in subjects differ so much that those basic connections are not made.

10 Classroom Display

All classrooms are to display numeracy posters in a visible location. These are to be provided by the Numeracy Coordinator.