



Whole School Numeracy Policy

Agreed by Local Governing Body.

Reviewed annually.

September 2016

Saltley Academy 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

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Appendices:

Exemplar booklet of methodologies, currently being compiled by Numeracy Co-ordinator and Lead practitioner.

Introduction:

The purposes of our whole-school numeracy policy:

- To develop and improve standards in numeracy across the school;
- To ensure consistency of practice including methods, vocabulary, notation, etc;
- To indicate areas for collaboration between subjects;
- To assist the transfer of pupils' knowledge, skills and understanding between subjects.

A definition of numeracy:

Numeracy is a proficiency which is developed mainly in mathematics but also in other subjects. It is more than an ability to do a 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 is gathered by counting and measuring, and presented in graphs, diagrams, charts and tables.

(Framework for Teaching Mathematics - yrs 7 to 9-Dfes)

Practice at Saltley Academy

1. Raising Standards

Raising Standards in Numeracy across our school cannot be solely judged in increasing test percentages. There is a need to evaluate the pupils' ability to transfer mathematical skills into other subject areas, applying techniques to problem solving. Their confidence in attempting this is initially as important as achieving the correct solution.

The Senior Leadership Team has a commitment to the implementation and evaluation of this work. They are aware of the need to create time for liaison and sustain the cross curricular links forged between subject areas with a focus on Lead Numeracy Departments (LNDs). The effectiveness of these links will reduce the replication of work by teachers and pupils.

2. Consistency of Practice

Teachers of mathematics should:

- be aware of the mathematical technique 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 when needed to other subject teachers and departments 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.

Teachers of subjects other than mathematics should:

- 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.

3. Our Areas of Collaboration:

Mental Arithmetic Techniques:

All departments should give every encouragement to pupils 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.

Written Calculations

Pupils are now expected to use long multiplication and long division, not other methods.

Whole school Policy on the use of calculators

In deciding when pupils use a calculator in lessons, we should ensure that:

- pupils' first resort should be mental methods;
- pupils have sufficient understanding of the calculation to decide the most appropriate method: mental, pencil and paper or calculator;
- pupils understand the four arithmetical operations and recognise which to use to solve a particular problem;

- pupils have the technical skills required to use the basic functions of a calculator constructively and efficiently, the order in which to use keys, how to enter numbers as money, measures, fractions, etc;
- when using a calculator, pupils are aware of the processes required and are able to say whether their answer is reasonable;
- pupils can interpret the calculator display in context (e.g 5.3 is £5.30 in money calculations);
- we help pupils, where necessary, to use the correct order of operations – especially in multi-step calculations, such as $(3.2 - 1.65 \times (15.6 - 5.77))$.

Vocabulary

The following are all important aspects of helping pupils with the technical vocabulary of Mathematics; 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 4, lateral means side so that pupils can use them to help remember meanings. This applies to both prefixes and suffixes to words.

4. Transfer of Skills

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

The Mathematics team will deliver the Curriculum, knowledge, skills and understanding through the schemes of work, using direct interactive teaching. They will make references to the applications of Mathematics in other subject areas and give contexts to many topics. Other curriculum teams will build on this knowledge and help pupils to apply them in a variety of situations. Liaison between curriculum areas is vital to pupils being confident with this transfer of skills and the Maths team willingly offers support to achieve this.

Detailed below are some examples different ways maths may be encountered in other curriculum areas.

ART – Symmetry; use of paint mixing as a ratio context.

ENGLISH – comparison of 2 data sets on word and sentence length.

Food Technology – recipes as a ratio context, reading scales.

GEOGRAPHY - representing data, use of Spreadsheets.

HISTORY – timelines, sequencing events.

ICT – representing data; considered use of graphs, bar charts for discrete data, histogram data.

MFL – dates, sequences and counting in other languages; use of basic graphs and surveys to practice foreign language vocabulary and reinforce interpretation of data.

MUSIC – fractions.

PHYSICAL EDUCATION – collection of real data for processing in Maths, estimation, time and measurement.

RELIGIOUS EDUCATION – interpretation and comparison of data gathered from secondary courses (internet) on e.g. developing and developed world.

SCIENCE – calculating with formulae, graphing skills.

TECHNOLOGY – measuring skills, units of area and volume, scale practical equipment, and proportion.

The Role of the Numeracy Coordinator

1. Meeting with LNDs to share the vision for numeracy across the school & identify key aspects.
2. Numeracy Co-ordinator to train LNDs on the 7 strands of numeracy.
 - a. Number
 - b. Ratio and Proportion
 - c. Algebra
 - d. Geometry and Measures
 - e. Rates of Change
 - f. Statistics
 - g. Probability

Resources include, numeracy mats, posters and booklets.

3. Each LND to identify key aspects delivered or required, within each strand for all years particularly Key Stage 3.
4. Collation of responses from each LND so that the Deputy (Curriculum) and Assistant Head (T&L) can have an overview, and are able to isolate key aspects and align them with the vision for numeracy to move forward.
5. LNDs to provide Maths department with context examples of maths within their area, to make the numeracy relevant.
6. Numeracy Coordinator and Lead Practitioner to identify where numeracy is used in LND's schemes of work and support them by going into their lessons, where possible.
7. Numeracy coordinator & LP to train LNDs in the methodologies for the key aspects.
8. Numeracy Coordinator & LP to produce an Exemplar booklet on the strands for future reference and training, which will form the updated appendices in the numeracy policy.
9. Monitor and evaluate the impact of the above to re inform planning of strands for the spring and the summer terms (academic year 2016-2017).