

WHOLE SCHOOL NUMERACY POLICY

MARCH 2013

INTRODUCTION AND CONTEXTUAL INFORMATION

EWTC is committed to raising the standards of numeracy of all 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.

INTRODUCTION:

Contextual Information:

The development of the concept of “numeracy”:

1995 (OED) – Numerate is acquainted with the basic principles of Mathematics.

A CURRENT 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 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.

The purposes of our whole-school numeracy policy:

- competence and confidence in mathematical knowledge, concepts and skills.
- an ability to solve problems, to reason, to think logically and to work systematically and accurately.
- initiative and an ability to work both independently and in cooperation with others.
- an ability to communicate mathematics.
- an ability to use and apply mathematics across the curriculum and in real life situations.
- an understanding of Mathematics through a process of enquiry and experiment.
- to develop, maintain 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.
- to develop a positive attitude towards Mathematics and an awareness of the fascination of Mathematics.

RAISING STANDARDS(PART 1)

Raising Standards in Numeracy across our school cannot be solely judged in increased 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.

There is a need to create time for liaison and to sustain the cross curricular links forged between subject areas. The effectiveness of these links will reduce the replication of work by teachers and pupils.

CONSISTENCY OF PRACTICE(PART 2)

The Mathematical Association recommend that teachers of Mathematics and teachers of other subjects co-operate on agreed strategies.

In particular that:

TEACHERS OF MATHEMATICS SHOULD:

- 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 and examination questions from other subjects in Mathematics lessons.

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.
- provide resources for Mathematics teachers to enable them to use examples of applications of numeracy relating to other subjects in mathematics lessons.

ROLE & USE OF CALCULATORS(PART 3)

In simple terms, each department needs to decide and then plan into each module of work whether calculators are banned, ignored, allowed, encouraged or compulsory!

Whole school Policy on the use of calculators

The school expects all pupils to bring their own scientific calculator to all lessons, in case they are required. 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 have the technical skills required to use the basic facilities of a calculator. constructively and efficiently, the order in which to use keys, how to enter numbers as money, measures, fractions, etc.
- pupils understand the four arithmetical operations and recognise which to use to solve a particular problem.
- 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(PART 4)

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 4, hypotenuse means longest side, so that pupils can use them to help remember meanings. This applies to both prefixes and suffixes to words.

Pupils 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 pupil 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 and then wondering what it means and losing confidence in his / her ability to answer the question. The instant recall of vocabulary and meanings can be improved through flash card activities in starters. This could be done as a starter at the beginning of a unit of work, introducing new vocabulary, or recalling vocabulary from previous mathematics.

TRANSFER OF SKILLS(PART 5)

"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 National Curriculum knowledge, skills and understanding through the Numeracy Strategy Framework using direct interactive teaching, predominantly in "3 part" lessons. They will make references to the applications of Mathematics in other subject areas and give contexts to many topics. Other curriculum teams can build on this knowledge and help pupils to apply them in a variety of situations. Liaison between curriculum areas is vital if pupils are to become confident with this transfer of skills and the Maths team willingly offers support to achieve this.

The transfer of skills is something that many pupils find difficult. It is essential to start from the basis that pupils realise it is the same skill that is being used; sometimes approaches in subjects differ so much that those basic connections are not made.

The 3 part lesson has enabled the Maths Department to cover work for other subject areas at appropriate times. This is often in the starter activity where key skills are rehearsed and sharpened so that pupils gain more from the forthcoming application in the other subject.

Subject areas are more aware now of the underlying maths skills and approaches that go with the applications that they use. In particular we need better links with

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. Interpretation and comparison of data gathered from secondary sources (internet) on e.g. developing and developed world.

HISTORY – timelines, sequencing events.

ICT – representing data; considered use of graphs not just pretty ones!

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

PHYSICAL EDUCATION – collection of real data for processing in Maths.

SCIENCE – calculating with formulae and using compound measures.

ROLE OF THE CO-ORDINATOR(PART 6)

- to take the lead in policy development.
- to support colleagues.
- to monitor progress in Mathematics – eg leading staff CPD, scrutiny of work, analysis of formal assessment data.
- to take responsibility for the choice, purchase and organisation of central resources for Mathematics, in consultation with colleagues.
- to liaise with other members of staff to form a coherent and progressive scheme of work which ensures both experience of, and capability in, Mathematics.
- to be familiar with current thinking concerning the teaching of Mathematics, and to disseminate information to colleagues.
- the co-ordinator will be responsible to the Headteacher and will liaise with the named link Governors.

EQUAL OPPORTUNITIES(PART 7)

All children should have equal access to the curriculum, irrespective of particular circumstances such as race, background, gender and capability. In the daily Mathematics lesson we support children in a variety of ways.

eg. repeating instructions, speaking clearly, emphasising key words, using picture cues, playing mathematical games, encouraging children to join in counting, chanting, finger games, rhymes etc.

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