NUMERACY POLICY

Introduction

Anita Straker, director of the national Numeracy Project, has defined numeracy as being:

"…more than knowing about numbers and number operations. It includes an ability and inclination to solve numerical problems, including those involving money or measures. It also demands familiarity with the ways in which numerical information is gathered by counting and measuring, and is presented in graphs, charts and tables."

It is recognised that all subjects do deal with issues of numeracy in their teaching. However, we recognise the fact that pupils have a sense of compartmentalisation of subject areas and find it difficult to apply lessons learnt in one subject to other subject areas. Any numeracy policy must address this problem. In considering this policy, the following general principles have been observed:

1. Numeracy must include the ability to use and apply mathematical skills to problem solving in a range of contexts across the curriculum;

2. It involves an appreciation and understanding of information presented in charts and tables across the curriculum;

3. It includes the gathering of information by counting and measuring across the curriculum;

4. It will deal with the collating of numerical information and selecting appropriate ways to display it across the curriculum;

5. It will lead to an appreciation of trends within number through analysis and interpretation.

Rationale

An effective Numeracy Policy must meet the following criteria:

- It must be readily achievable
- It must lead to increased confidence and competence in numeracy both for staff and pupils
- It must foster a positive attitude to the use of number
- It must demonstrate clearly that number and an understanding of number is applicable to all subjects.

The aim of this policy is to provide means of establishing common collaborative procedures for delivering numeracy across the curriculum.

POLICY

Since the school recruits its pupils at age 14, departments expect them to be able to display the following numerical skills:

- Basis mathematical skills, such as adding, subtracting, multiplying and dividing
- Using percentages, fractions and decimals
- Understanding proportions
- Using and interpreting graphs, charts and tables
- Understanding long term and short term chronology
- Money calculations
- Using positive and negative numbers
- Understanding mean, mode and median
- Understanding angles and degrees
- Units of measurement, particularly metric

It is recognised that the facility and understanding of pupils in some of these areas is limited and accordingly there may need to be some instruction given within departments, where deemed necessary.

Across the curriculum the Numeracy Policy will:

- Raise the awareness of pupils of the relevance and significance of numeracy across the curriculum and beyond
- Encourage the accurate, confident use of numeracy where it naturally arises in the curriculum
- Encourage the use of ICT as a means of delivering numeracy across the curriculum
- Implement the delivery of numeracy skills in all subject areas, where appropriate
- Establish a procedure for the dissemination of good practice between departments
- Where appropriate, pupils will be encouraged to use mental methods as a first resort in calculation
- Where appropriate the use of estimation in establishing numerical trends will be used
- Where appropriate all subject areas will seek to use the same numerical processes in basic calculations
- As far as possible, the metric system of measurement should be used by all departments

In the individual subject areas, the following numerical skills will be deployed. Those shown with an asterisk are taught within the Year 11 and 12 Mathematics programmes.

SCIENCE/TECHNOLOGY

- *Simple Counting
- *Measurement
- *Standardisation of quantities
- *Calculations involving means, ratios, magnification, percentages, rates per hour
- *Cross multiplying and rearrangement of formulae

- *Gradients and graphs
- *Powers and indices
- *Conversion between different units
- *Significant figures
- Collection and tabulation of data
- Scale and proportion
- Number systems

ICT & BUSINESS STUDIES

- Amounts and sizes
- *Handling statistics
- *Using formulae
- *Scales and proportions

ENVIRONMENT AND SOCIETY

Home Economics

- *Decimals, fractions and percentages
- *Measurement
- *Ratios for recipes
- *Use of Spreadsheet
- *Social Arithmetic
- *Using and interpreting conversion graphs (e.g. Imperial to metric)
- *Calculation involving time
- *Estimation
- *Statistics - e.g. Mean of data

Geography

- *Proportions and percentages
- *Basic calculation
- *Appropriate choice of, construction and interpretation of charts and graphs
- *Scales and measurement
- *Statistical Calculation - Mean mode and median
- *Estimation
- *Use of ICT, including spreadsheets
- Spatial distribution of numerical values, including mapping
- Spearman's Rank
- Chi squared distribution
- Nearest neighbour index
- Appreciation of trends in data

History/Politics

- *Understanding of chronology
- *Interpretation of numerical data including tables and graphs
- *Basic Calculations

Business Studies

- *Proportions, ratios, indices
- *Construction and interpretation of graphs
- *Linear programming
- *Use of ICT, particularly spreadsheets
- Statistical calculations - mean, mode, median and moving average
- Critical path analysis
- Break even analysis
- Cost curves

ENGLISH AND LANGUAGES

- *Basic Calculation
- *Calculation involving time
- *Calculations involving money
- *Understanding of proportion - rates of currency exchange
- *Use of estimation
- Number systems - particularly Roman numerals

CREATIVE AND EXPRESSIVE

Music

- Understanding fractions, as in beats per bar
- Basic problem solving
- Appreciation of the feel of different tempi
- Use of ICT in sequencing, involving basic calculation

Art

- The need for mathematical accuracy in design
- Measuring and weighing
- Appreciation of scales in digital photographing

PE and Games

- Basic counting - as in keeping scores or taking turn acting as umpire
- Measuring and counting in health related PE

IMPLEMENTATION AND EVALUATION

INDIVIDUAL TEACHERS

- Each teacher will be responsible for the incorporation of numeracy in lesson planning, where appropriate
- Each teacher will be responsible for identifying those areas of teaching where numeracy skills are necessary
- Each teacher will be expected to develop their own confidence and competence in numeracy through collaboration with other members of staff and though this to encourage competence and confidence amongst pupils

- Each teacher will be responsible for monitoring and evaluating the delivery of numeracy in their own classes

HEADS OF DEPARTMENT/SUBJECT CO-ORDINATORS

- Each Head of Department will be responsible for the incorporation of numeracy, in line with this policy statement, into departmental schemes and statements
- Dissemination of good practice within the department will be encouraged, facilitating the empowerment of staff
- The Head of Department will be responsible for monitoring the effectiveness of the delivery of numeracy within the department

SENIOR LEADERSHIP TEAM

- The SLT will incorporate the policy into the School Development Plan
- The SLT will review, and if possible, continue to upgrade ICT provision
- The SLT will, where possible, facilitate requests for INSET in numeracy
- The operation of the policy will be reviewed regularly by means of a numeracy audit.

SPECIAL NEEDS

The school obtains specific information from the JHS about mathematical ability. However, the following points should be noted:

- Staff should be vigilant in identifying cases of serious numerical difficulty among pupils.
- Such information should be disseminated to other staff, and if considered sufficiently serious, reported to the SENCO
- In certain circumstances it may be necessary to provide external support for such pupils.

REVIEW OF IMPLEMENTATION

The policy will be updated regularly.

ADDENDUM

The following points should be noted:

1. The existence of possible conflict between departments on the method of presentation of numerical information. For instance the requirement for straight-line graphs in certain subjects, as opposed to curved graphs in others. It is recognised that this does lead to the possibility of confusion. All numerical activity should use a standardised system of calculation, while accepting that the requirements of the Examination Boards dictate that in some areas there must be a different approach.

2. It is suggested that a glossary of basic terms applicable to numeracy should be drawn up by each department as an aid to staff.

3. Although the statement does identify topics taught by the Maths Department, it is felt that it would be wrong to try to insist that the order of delivery of these topics be dictated by other departments. This may mean that a department will have to ensure itself that pupils understand and can do basic calculations required by its scheme of work.

30 June 2008