



NUMERACY ACROSS THE CURRICULUM

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Leader of Policy Review	Mrs. J. Cooper, Mrs. S. Bradford		
Associated Policies	Additional Needs, Skills Development		

Numeracy is defined as:

- Knowing about numbers and number operations (an ‘at-homeness’ with numbers)
- Ability to make use of mathematical skills to cope with the practical mathematical demands of everyday life
- Having an ability and inclination to solve numerical problems, including those involving money or measures
- Ability to estimate and approximate number in a range of situations
- Appreciation and understanding of numerical information presented in mathematical terms in graphs, charts or tables

Teachers in all subject areas have a part to play in developing students’ numeracy skills. To help their students become more numerate, teachers should note the following:

- Number is central to numeracy in our society. It is commonly used in everyday life to calculate, count, order, measure, predict, describe, explain and justify. Students must continue to develop their competence with number throughout all their years of schooling.
- It is important to give students the chance to learn through investigation, exploration and conjecture. Teachers will always need to intervene when the occasion demands it – for instance, when their students, either individually or as a group, need to acquire particular knowledge or skills within an acceptable period of time.
- All students need to be given classroom opportunities to practise real-life applications of mathematics.

SUBJECT-BASED CONTRIBUTIONS

Teachers in all subjects can help students to become numerate and confident enough to tackle mathematical problems. Thus all teachers should:

- Highlight opportunities for the use of numeracy within their subject and try to ensure that the materials presented to students will match their capability
- Discourage students from writing down answers only and encourage students to show their numerical working out within the main body of their work
- Encourage the use of estimation, particularly for checking work
- Encourage students to write mathematically correct statements
- Recognise that there is never only one correct method and encourage students to develop their own correct methods where appropriate
- Help students to understand the methods they are using or being taught, as students gain more and are likely to remember much more easily if they understand the method
- Encourage students to use non-calculator methods whenever possible
- Encourage students to use the correct language eg. the word ‘mean’ rather than just ‘average’

The following are examples of activities that can help to develop numeracy skills.

English

English lessons can help to develop and support students' numeracy skills, for example, by use of mathematical vocabulary and technical terms, by asking children to read and interpret problems to identify the mathematical content, and by encouraging them to explain, argue and present their conclusions to others.

Science

Almost every scientific investigation or experiment is likely to require one or more of the mathematical skills of classifying, counting, measuring, calculating, estimating, and recording in tables and graphs. In science students will, for example, order numbers, including decimals, calculate simple means and percentages, use negative numbers when taking temperatures, decide whether it is more appropriate to use a line graph or bar chart, and plot, interpret and predict from graphs.

Art and Design, Technology and Home Economics

Measurements are often needed in Art and Technology. Many patterns and constructions are based on spatial ideas and properties of shapes, including symmetry. A lot of work is also undertaken using estimation of measurement and quantities. Designs may need enlarging or reducing, introducing ideas of multiplication and ratio. When dealing with recipes and cooking students will carry out a great deal of measurement calculations that include working out times and calculating cost.

ICT

Children will apply and use mathematics in a variety of ways when they solve problems using ICT. For example, they will collect and classify data, enter it into data handling software, produce graphs and tables, and interpret and explain their results. Their work in control includes the measurement of distance and angle, using uniform non-standard then standard measures. When they use computer models and simulations they will draw on their abilities to manipulate numbers and identify patterns and relationships.

History, Geography, and Religious Education

In History and Geography children will collect data by counting and measuring and make use of measurements of many kinds. The study of maps includes the use of co-ordinates and ideas of angle, direction, position, scale and ratio. The pattern of the days of the week, the calendar and recurring annual festivals all have a mathematical basis. For older children historical ideas require understanding of the passage of time, which can be illustrated on a time line, similar to the number line that they already know.

Physical Education and Music

Athletic activities require measurement of height, distance and time, while ideas of counting, time, symmetry, movement, position and direction are used extensively in music, dance, gymnastics and ball games.

Business Studies

Within this subject there is a wide scope for numeracy in relation to real life situations. Also there is scope for handling data with meaningful figures. This can augment work carried out in other departments.

Modern Languages

Looking at currency within a country. Calculations in a foreign language. A lot of work that is already undertaken in the mathematics classes and careers can be applied here to learn about different countries.

Careers and Pastoral

In these two areas numeracy can be directly related to everyday life. Budgeting, paying bills, running a home and other money management issues can be undertaken.

Tutor Group Sessions

Encourage students to answer the Numeracy Challenge in the school Newsheet

NUMERACY INTERVENTION PROGRAMME

On its own, quality teaching of numeracy across the curriculum will not enable students who have fallen significantly behind in numeracy to catch up. An early-intervention programme helps these students become independent learners as part of the whole-school approach to numeracy.

Students to be involved in Year 7 will be identified using:

- Information from primary schools, including WNT data and CATs scores
- Diagnostic procedures built into the initial topics in the Mathematics Year 7 scheme of work
- Information regarding specific students provided by Additional Needs staff

Focused Support

Selected students from year's 7, 8 and 9 based on last year's Procedural and Reasoning Test Data (together with teacher/parental input) are placed in a selection of intervention groups (EG: Intervention 1 – both below 85; Intervention 2 – below 85 in procedural; Intervention 3 – below 85 in reasoning etc) that take place 3 times a week with a specialist teacher or LSA (Sixth Form Sum Buddies also assist). The programme is individualised for students as required, with the aim of improving confidence and increasing attainment. Progress is monitored through a combination of teacher assessment and testing.

OTHER SUPPORT STRATEGIES

A general system of support for numeracy will target a wider range of students across KS3. Such strategies will include:

- Involvement of parents
- Information to all teachers about the nature of specific numeracy difficulties of students
- Sale Sharks Rugby Club visits enabling students to see the application of numeracy in a wider context
- Mathematics Club, Chess Club and the UKMT Mathematics Challenges stretch and challenge those with a passion for Mathematics
- All students in KS4 work towards Application of Number Essential Skill in their mathematics lessons as part of the Welsh Baccalaureate Diploma.