



Numeracy Across the Curriculum

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NUMERACY ACROSS THE CURRICULUM POLICY

Purpose

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

It is important that all students develop the ability to apply numerical understanding and skills confidently to solve problems in a variety of curriculum contexts and to cope with practical mathematical demands of everyday life.

Developing numeracy skills in learners is not just the responsibility of the Maths department. All subjects where we expect pupils to apply numerical skills should be taking positive steps to develop students' maths skills and concepts, and should provide opportunities for them to acquire the mathematical language crucial to understanding mathematical knowledge.

Contextual Information:

The development of the concept of “numeracy”:

1959 – (Crowther report) - Numeracy is defined as a word to represent the mirror image of literacy.

1982 – (Cockcroft report) - A numerate pupil is one who has the ability to cope confidently with the mathematical needs of adult life. There was an emphasis on the wider aspects of numeracy and not purely the skills of computation

1995 (OED) – numerate means acquainted with the basic principles of Mathematics

A current definition of numeracy:

Numeracy is a proficiency, which develops 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.

(Framework for Teaching Mathematics – yr 7 to 9 – DfES)

Numeracy Skills

Numeracy is the ability to cope confidently with the mathematical demands of further education, employment and adult life. This includes:

- ❖ the ability to carry out basic calculations efficiently and accurately, either mentally or with pencil and paper as appropriate
- ❖ the ability to apply knowledge of number to both familiar and new circumstances and to use it in the solution of problems

- ❖ the ability to understand and use units of measurement of length, mass, capacity, time and temperature
- ❖ the ability to understand and use information presented in mathematical forms, including graphs, tables and charts

Implementation at Whole-School Level Roles and Responsibilities

The Senior Leadership Team leads and gives a high profile to Numeracy.

Teacher of Maths will:

- 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 maths lessons
- deliver regular “stop everything and problem solve” sessions to increase positive numeracy awareness and application among staff and students

Teachers of subjects other than Maths will:

- be positive about maths and avoid negative references relating to maths (e.g. this is difficult/boring. I can't do maths etc.)
- encourage students to use maths confidently where it naturally occurs within their subject
- encourage students to use mental maths (rather than using calculators) where simple calculations are required
- be aware of appropriate expectations of students and difficulties that might be experienced with numeracy skills
- provide information for the maths teacher on the stage at which specific numeracy skills will be required for particular groups
- provide resources for the math teacher to enable them to use examples of applications of numeracy relating to other subjects in maths lessons
- be aware of strategies and interventions being employed in the maths department to raise numeracy standards
- liaise with the Maths teacher regarding the delivery of specific topics involving maths content

Students will:

- ❖ recognise the importance of numeracy in all aspects of their learning and will take responsibility for improving their numeracy skills, where these are applied in different subjects

Parents will be encouraged to:

- ❖ encourage their children to develop their numeracy skills, especially in mental arithmetic

Management Committee will:

- ❖ monitor the profile of numeracy work through their involvement with link departments
- ❖ ensure numeracy issues are assessed in relevant areas of school monitoring.

Monitoring and Evaluation

The Maths Lead will quality assure other departments' medium-term plans for numeracy opportunities and take part in learning walks and book looks to ensure that the planning is being implemented. The Senior Leadership Team will monitor the development of numeracy skills through lesson observation, evidence and curriculum reviews. The Management Committee's Curriculum Committee will receive updates and will monitor longer term strategy. All monitoring will seek to identify progression and impact in order to ensure that students' numeracy skills improve.

Some examples of numeracy in lessons other than Maths

Examples of possible concepts and topics to develop the focus on numeracy include the following:

ART and DESIGN Tessellation and symmetry - Escher Geometric shapes in art - Kandinsky, Mondrian 2D, 3D, ratios and transformations, enlargements, measurements and converting units, constructions, drawing and trigonometry.

ENGLISH Logical ordering for persuasive argument, Frequency of words (e.g. Shakespeare vs. Bacon) Algebraic aspects of poetry structure

FOOD Ratios in recipes, measurements and converting units, time calculations when working out timings for cooking food.

HISTORY Timelines and dates interpreting statistics, relevance of shape in iconography/propaganda History of maths, bar charts for looking at historical information as well as data presented in charts.

COMPUTING Spreadsheets, databases and flowcharts. Use of functions in spreadsheets for various topics in maths, Dimensions of graphics

MUSIC & DRAMA Time, rhythm and meter Pythagoras, numerical scales and ratios, golden ratio used by composers—Debussy Maths in set design, spatial awareness on stage

PE Distance, speed and time calculations, angles, ratios, power/weight, shape, use of some equipment, spatial awareness needed for team sports in particular

REP Use of shape in iconography, importance of numbers as factors and multiples in religions—e.g. 12 Dates and calendar

SCIENCE Algebraic change of subject, various arithmetical calculations, algebraic substitution into formulae golden ratio/Fibonacci sequence in nature, graphs and charts of all kinds