Numeracy Policy

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Whole School Numeracy Across the Curriculum Policy

Numeracy across the curriculum

Numeracy is a key skill in students' learning and all learners are entitled to quality experiences in this area. The teaching of Numeracy is the responsibility of all staff at Bristnall Hall Academy and this policy further supports the Academy's drive for consistency in approaches to Numeracy across the curriculum.

Defining Numeracy

For the purpose of the school numeracy policy, numeracy is defined as any area which involves the skills of: number work, use of calculators and ICT to assist with mathematical problems, spatial awareness, distance awareness, time awareness, critical thinking, problem solving, sorting and classification, secure understanding and handling of shapes, handling and interpreting of data, recording handling and collecting measurements, and awareness of probability and risk.

The Early Years Learning Framework (EYLF) (DEEWR, 2009) defines numeracy (p. 38) as:

... the capacity, confidence and disposition to use mathematics in daily life.

Spatial sense, structure and pattern, number, measurement, data argumentation, connections and exploring the world mathematically are the powerful mathematical ideas children need to become numerate.

Everyday learning about maths (Connor & Neal, 2005) explains (p. 3) that:

Mathematics plays an important part in our everyday lives. We use maths when we read a bus timetable, find our favourite TV program, weigh out ingredients for cooking, check our money at the supermarket, or set the table for dinner.

Mission Statement:

Bristnall Hall Academy is a school committed to the development of numeracy skills for all its students. Our aim is to raise the achievement of all learners in the Academy by seeking to develop their Numerical skills by consistent and accurate application across the curriculum. We believe that Numeracy can be consolidated and enhanced when student/students have opportunities to apply and develop them across the curriculum. Poor numeracy skills, in particular, hold back student/ students' progress and can lower their self-esteem. To improve these skills is a whole Academy matter. Furthermore, we also aim to help them to develop sufficient numeracy skills so that they will be fully equipped for any further education and future adult life.

The Aim of the Policy

The aim of Bristnall Hall Academy's Numeracy Policy, is to ensure that on leaving this school at the end of year 11 all students can be defined as numerate. Both to support them in future education, as well as to help them in adult life.

Bristnall Hall Academy is committed to:

- Raising the profile of numeracy within the Academy;
- Raising standards of numeracy;
- Making numeracy teaching an overt part of every curriculum area.

Help children achieve more

Bristnall Hall Academy wholeheartedly supports the sentiments of helping children to achieve more. All children whatever their background or circumstances need to:

- Be healthy
- Stay safe
- Enjoy and achieve
- Make a positive contribution
- Achieve economic well-being

We endeavour to promote achievement at all levels including GCSE and Entry level. We are proactive in encouraging outside agency input where it will be of benefit to the wellbeing and progress of our students

Implementing Numeracy Across the Curriculum

The role of all staff

In order for the cross curricular strategy to be effective, it is important that all staff: Understand what numeracy is;

- Are aware of how they can support the delivery of numeracy within their subject;
- Ensure that numerical tasks included in their lessons are age and ability appropriate and used accurately;
- Consider numeracy in their short and mid-term planning, using the Numeracy for guidance.
- Those members of staff, who have responsibility as either form tutors or form shadows, will also have a responsibility to promote numeracy skills and numeracy-based activities during form time across years 7 to 10. Year 11 have their own numeracy activities

The role of the Numeracy Coordinator:

- Work with the Leadership Team to determine a strategy for dealing with numeracy across the curriculum and to ensure the effective development of the whole Academy numeracy policy;
- Monitor the implementation of the whole Academy numeracy policy through learning walks and book checks;

- Evaluate the effectiveness of the strategy and modify it as necessary;
- Lead staff Professional Development on common practices and methods to be adopted across the whole Academy and provide exemplar materials for use in classroom once a full audit is completed.
- Work systematically with Numeracy Links, Subject Teachers and individual staff.
- Encourage teachers of Mathematics to provide assistance and advice to other Numeracy Links and subject teachers so that a consistent approach is used across the whole Academy
- Raise the profile of numeracy across the whole Academy;
- Seek opportunities for topics from other subjects to be used in numeracy lessons;
- Publicise mathematical methods to be used consistently across the Academy;
- Ensure that there is constructive communication between the Numeracy Links and the whole Academy.

The role of the Senior Leadership Team

- Support the development and implementation of cross curricular numeracy policy and practice;
- Monitor the effectiveness of cross curricular numeracy strategy in raising standards of achievement;
- Provide Professional Development opportunities and resources for teachers and associate staff as appropriate to further support their own understanding and practical competency in numeracy.

The Role of Area Leads, Subject Leads and Numeracy Links

In order that the policy becomes whole Academy practice, it is important that Heads of Faculty, Coordinators, Curriculum Leaders, Subject Leaders and Numeracy Links ensures that:

- Schemes of learning have opportunities for numeracy included and identified;
- Lesson plans include relevant numeracy learning outcomes;
- Each Curriculum Area has a resource of relevant mathematical methods accessible to staff;
- New staff are aware of the Numeracy Policy and its inclusion in the subject area;
- The promotion of numeracy in lessons is included in the regular monitoring of learning and teaching and departmental self-review.

The role of Departments within the School

Provide their SOW to the numeracy coordinator. The numeracy coordinator can then highlight the areas of the curriculum where they could potentially use numeracy skills.

The numeracy coordinator will support departments to do this. Upon being given advice the departments are required to add numeracy into their lessons, where the opportunities are highlighted in their schemes of work. If there are any areas where departments feel they need any additional training or support, the numeracy coordinator will aim to meet the department's needs.

Departments should aim to standardise the terminology used for numeracy skills and activities for example, ensuring that a certain style of graph is always referred to by the correct name. Departments should aim to promote awareness of numeracy across the curriculum through a range of strategies including classroom displays, explanation of vocabulary and making explicit reference to cross-curricular numeracy skills.

The role of form tutors

To ensure that all students across key stage 3 complete the numeracy challenge on a weekly basis. This will assist the students to improve their basic numerical skills. To ensure that all students in year 10 complete the skills challenge on a weekly basis to improve their basic numerical skills across all mathematical key elements.

Establishing links between Numeracy and other Subject Areas

Numeracy contributes to subject areas across all key stages within the Academy and often provides practical applications of skills acquired in Mathematics lessons. It is a good opportunity to apply and use numeracy in real contexts.

The following guidelines summarise the mathematical skills students, of different abilities, should have.

From key stage 3 onwards

a. All students should:

- Have a sense of the size of a number and where it fits into the number system;
- Be able to do simple addition, subtraction, multiplication and division using either a mental or written method;
- Make estimates of measurement and be able to identify different units of measurement;
- Have a knowledge of the times tables either by recall or by adding on.
- Understand how to apply numerical skills in the real world.

b. More able students should:

- Be able to use mental methods to perform calculations involving addition, subtraction, multiplication and division of numbers including simple decimals;
- Be able to convert between metric units;
- Have a knowledge of simple equivalent fractions, decimals and percentages (1/2, 0.5, 50%, etc.);
- Be able to find a simple percentage of a quantity (10%, 25%, 50% and 100%);
- Be able to perform simple fractions by cancelling common factors;
- Be able to read information from simple diagrams, charts and graphs (bar charts, pictograms and pie charts);
- Make sense of number problems and be able to identify the operations required to solve the problem.
- Understand how to apply numerical skills in the real world.

High ability students should:

- Calculate accurately using a variety of strategies both mental and written methods, including two and three digit numbers and decimals;
- Be able to identify equivalent fractions, as well as their related decimals and percentages;
- Be able to find the percentage of a quantity with or without a calculator and understand problems involving percentage increase and decrease;
- Explain their methods and reasoning for solving a problem using mathematical language;
- Judge whether their answers are reasonable and have a range of strategies for checking their answers explain and interpret charts, diagrams, graphs and tables.
- Understand how to apply numerical skills in the real world.

English

Numeracy lessons help to develop literacy skills by teaching mathematical vocabulary and technical terms and by requiring learners to read and interpret problems and identify the numeracy necessary to solve the problem. It also requires learners to explain their methods and strategies to others and present their findings and conclusions. English lessons may provide non-fiction texts in which mathematical information in the form of graphs, tables or charts may need to be interpreted and explained. In sessions in the LRC Dewey classification is an excellent application of decimal ordering.

Science

Almost every scientific experiment or investigation is likely to require some mathematical skills in classifying, counting, measuring, calculating, estimating, and recording in charts, tables or graphs. Science will provide a wide range of situations in which numeracy skills will be required in real life contexts.

Art, Design and Technology

All of these areas rely quite heavily on the learner being able to measure and use spatial skills and the properties of shapes including the use of symmetry and tessellations. Designs may require enlarging or reducing and the use of ratios and proportions may be required in the context of modifying recipes. Both metric and imperial measurements and conversions may be taught and used. The need for plans in D&T requires students to be able to produce scale drawings and be able to draw 2D and 3D shapes and elevations as well as scale work.

Business Studies and Economics

Numeracy is an important part of all Business Studies and Economics courses. Learners use numeracy in both the creation and interpretation of graphs, charts and tables. Percentages are widely used in data comparisons. Learners need to be able to calculate using mental calculations but they also need to be confident in the use of a calculator Skills of analysis are involved when looking at primary and secondary data and in the scrutiny of questionnaire results. Learners also use Excel spread sheets.

Humanities

In History and Geography learners may collect data by measuring or counting and record results in the form of charts, tables or graphs. They will also need to interpret data presented in the form of charts or graphs. Historical ideas require an understanding of time and time lines similar to the number line. Map skills require the understanding of coordinates and ideas of angles, directions, position, scale and ratios, height, length movement.

Information Technology

Learners will be able to use skills of collecting, classifying and representing data by using data handling software and produce graphs and tables and interpret their results. They may use computer models and simulations that will require their ability to manipulate numbers and identify patterns and relationships. When using control software they require the ideas of angle, measurement and distance.

The key to making the most of these opportunities is to identify the mathematical possibilities across the curriculum at the planning stages. Students' attention should

also be drawn to the links between subjects both in numeracy lessons and when using mathematical skills in other areas of the curriculum.

Modern Foreign Languages (MFL)

Learners use numeracy in MFL when learning to tell the time, calculating café bills, handling money, working on days and dates and doing simple arithmetic calculations involving addition, subtraction and multiplication. Work in MFL offers some learners the additional opportunity they need to grasp the fundamentals of number work.

Ensuring a Consistent Approach to Numeracy across the Curriculum

It must be recognised that not all learners in a particular group will have the same numerical skills and where you are unsure of the capabilities of particular students a member of the Mathematics department should be consulted.

- All subject teachers will discourage students from writing answers only and encourage them to show numerical working within the body of their work.=
- All teachers will encourage the writing of mathematically correct statements.
- All teachers will encourage the use of estimation.
- It must be recognised that there is never only one correct method and learners will be encouraged to develop their own strategies and methods where appropriate and will not necessarily be taught *set* ways.
- Wherever possible learners will be encouraged to vocalise their numeracy so that full understanding can be promoted - this may be an essential step for some learners.
- All learners should be helped to understand the method they are being asked to use or being taught - they are then more likely to be able to transfer this method and remember it rather than learning by rote.

Using and Applying Numeracy

In 'Using and Applying numeracy' to solve problems, students use a variety of thinking skills which should be transferable to other subject areas. These include:

- Breaking the problem down into more manageable parts;
- logical deduction;
- hypothesising;
- Predicting and testing.

Numeracy across the Curriculum

The 'Numeracy across the Curriculum' booklet yet to be added to the Academy platform contains practical hints and guidance on developing the Numerical skills of students through consistent and accurate application across the curriculum. This booklet is accessible by all subject areas via the shared numeracy area, and is also shared with parents through the annual Year 7 Literacy and Numeracy Evening.

Evaluating the Efficiency of the whole school Numeracy Policy

The value and effectiveness of the school's numeracy policy will be regularly reviewed and updated as necessary. This evaluation will be through a combination of student and staff evaluation, feedback and requirements of the Maths department, the requirements and priorities of the Senior Leadership team and overall standards within maths and form time numeracy. Lesson observations and 'drop-ins' used to share good practice.