

## Mission Statement

In Christ We Grow – As a learning community we live out our Mission Statement striving for excellence through caring, sharing and achieving.

The purposes of our whole-school Numeracy Policy:

- To support the development of Functional Skills
- 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 learners' knowledge, skills and understanding between subjects.

## Rationale

As an Engineering College we promote skills for life including being numerate. Numeracy is a proficiency that is developed in mathematics and throughout the rest of the curriculum. It is more than the ability to do basic arithmetic. 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, presented in graphs, diagrams, charts and tables.

Poor numeracy skills hold back learner's progress and can lower their self-esteem. These skills can be consolidated and enhanced when the learners have opportunities to apply them across the curriculum. Therefore, improving these skills is a whole- school focus.

As teachers we strive to deepen learning by:

- Being aware of the range of mathematical attainment that learners bring to our lessons.
- Building learners' confidence when they are struggling with a calculation.
- Encouraging learners to understand the methods that they are using.
- Using mathematical language accurately and consistently within the department and across the school.
- Valuing learners' different methods for calculation and regularly ask "How did you do that?" and "Did anyone do that a different way?"

We encourage learners to:

- See mental calculation as the first resort when faced with any calculation.
- Explain any calculation they have done by showing all their working out.
- Estimate before a calculation is done whenever possible.
- Consider the reasonableness of their answers after a calculation has been done.
- Know how to use all the relevant buttons on their calculator efficiently and effectively when it is appropriate and to be able to interpret the display sensibly.
- Use appropriate mathematical language confidently

### **Consistency of Practice**

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 learners and difficulties likely to be experienced in various age and ability groups.
- through liaison with other teachers, attempt to ensure that learners 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 learners to use these correctly.
- be aware of appropriate expectations of learners 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

### **Whole school Policy on the use of calculators**

The school expects all learners to bring their own scientific calculator to lessons when required. In deciding when learners use a calculator in lessons we should ensure that:

- learners' first resort should be mental methods;
- learners have sufficient understanding of the calculation to decide the most appropriate method: mental, pencil and paper or calculator;
- learners 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.;

- learners understand the four arithmetical operations and recognise which to use to solve a particular problem;
- when using a calculator, learners are aware of the processes required and are able to say whether their answer is reasonable;
- learners can interpret the calculator display in context (e.g. 5.3 is £5.30 in money calculations);
- we help learners, 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**

Learners 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 learner 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.

## **Practical Strategies**

Teaching numeracy should involve a range of direct teaching strategies, including

- Directing and telling – so that learners are clear what they should be doing and why.
- Demonstrating and modelling – so that learners see how to use particular skills and strategies
- Explaining and illustrating – explaining a method of calculation and discussing why it works.
- Questioning and discussing – using open and closed questions, challenging their assumptions and making them think.
- Exploring and investigating – asking learners to pose problems or suggest a line of enquiry.
- Consolidating and embedding – providing varied opportunities to practice and develop newly learned skills through a variety of activities.
- Reflecting and evaluating – identifying learners' errors, using them as positive teaching points by talking about them and any misconceptions that led to them.
- Summarising and reminding – identifying and correcting misunderstandings, picking out key points and ideas

In support of the following strands and engineering:

### **Using and applying mathematics to solve problems**

All departments should encourage learners to:

- use problem solving methods and applications in a variety of contexts to develop reasoning, thinking and communication skills.

## **Numbers and the number system**

All departments should:

- make learners aware of place value, ordering and rounding
- consolidate understanding of integers, powers and roots
- help learners understand the relationships between fractions, decimals, percentages, ratio and proportion

## **Calculations**

All departments should:

- show learners how to perform number operations and discuss the relationships between them
- encourage learners to perform mental methods and rapid recall of number facts
- encourage the use of written methods when appropriate.
- encourage learners to use calculator methods when appropriate
- encourage learners to check results

## **Algebra**

All departments should, where possible:

- make use of equations, formulae and identities linked to their subject
- derive and interpret sequences, functions and graphs linked to their subject and the real world.

## **Shape, space and measures**

All departments should, where appropriate, provide opportunities for learners to perform:

- geometrical reasoning; lines angles and shapes
- transformations
- coordinates
- construction and loci
- measures and mensuration

## **Handling data**

All departments should:

- teach learners to how to specify a problem and help learners when planning and collecting data
- assist and give learners opportunity to process and discuss results
- provide opportunities for learners to predict the outcome of an event using probability

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