NUMERACY ACROSS THE CURRICULUM POLICY

Mission Statement

"*Love one another as I have loved" (John, 15)*

We believe that Jesus Christ and his Gospel Call – to love God and all people – are at the heart of what we do.
He inspires us, as children of God, to uphold the dignity of each individual.
We strive to develop a community in Christ which fully supports all in achieving their potential – spiritually, academically and personally.

Aims

We at Christ The King Catholic High School aim to:

- raise the standards of numeracy of all of its students
- develop the ability of all its students to use numeracy skills effectively in all areas of the curriculum and
- develop the numeracy skills necessary to cope confidently with the demands of further education, employment and adult life.

Objectives

Our objectives are:

- 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 students' knowledge, skills and understanding between subjects.

A current definition of numeracy:

Numeracy is a proficiency which is developed 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 are gathered by counting and measuring, and presented in graphs, diagrams, charts and tables.

(Framework for Teaching Mathematics – Yrs 7 to 9)

This policy seeks to provide a framework for the development of cohesive teaching of numeracy across all aspects of the school curriculum.

I Raising Standards

Raising Standards in Numeracy across our school cannot be solely judged in increased test percentages. There is a need to evaluate the students' ability to transfer mathematical skills into other subject areas, applying techniques to problem solving. Their confidence in attempting this is initially as important as achieving the correct solution. Student interviews and work sampling will be the main processes for evaluating the success of our practice.

There are some key roles within school that will ensure that this policy is effective and becomes a well established part of our school practice.

The Senior Leadership Team has a commitment to the implementation and evaluation of this work. They are aware of the need to create time for liaison and sustain the cross curricular links forged between subject areas. The effectiveness of these links will reduce the replication of work by teachers and students.

II Consistency of Practice

Departmental audits are carried out in order that teachers of Mathematics and teachers of other subjects co-operate and take ownership of agreed strategies.
In particular that:

Teachers of mathematics should:

1. 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.

2. provide information to other subject teachers on appropriate expectations of students and difficulties likely to be experienced in various age and ability groups.

3. 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.

4. seek opportunities to use topics and examination questions from other subjects in mathematics lessons.

Teachers of subjects other than mathematics should:

1. ensure that they are familiar with correct mathematical language, notation, conventions and techniques, relating to their own subject, and encourage students to use these correctly

2. be aware of appropriate expectations of students and difficulties that might be experienced with numeracy skills

3. provide information for mathematics teachers on the stage at which specific numeracy skills will be required for particular groups

4. provide resources for mathematics teachers to enable them to use examples of applications of numeracy relating to other subjects in mathematics lessons

5. support events which help to raise the profile of mathematics, for example National Numeracy Day or World Maths Day

6. be aware of students needing mathematics intervention during registration.

III Our Areas of Collaboration:

Mental Arithmetic Techniques

- There is an acceptance that students are able to tackle the same questions with a variety of methods. These approaches rely on mixing skills, ideas and facts; this is done by students drawing on their personal preferences and the particular question.
- All departments should give every encouragement to students using mental techniques but must also ensure that they are guided towards efficient methods and do not attempt convoluted mental techniques when a written or calculator method is required.

Written Calculations

- The desire for students to progress to formal algorithms and the most efficient methods will be encouraged but not at the expense of having only a method rather than a cohesive and full understanding.

Whole school Policy on the use of calculators

In deciding when students use a calculator in lessons we should ensure that:

- calculators are included in the school equipment list.
- students' first resort should be mental methods;
- students have sufficient understanding of the calculation to decide the most appropriate method: mental, pencil and paper or calculator;
- students are able to calculate an approximate answer mentally first
- students 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.;
- students understand the four arithmetical operations and recognise which to use to solve a particular problem;
- when using a calculator, students are aware of the processes required and are able to say whether their answer is reasonable;
- students can interpret the calculator display in context (e.g. 5.3 is £5.30 in money calculations);
- we help students, where necessary, to use the correct order of operations – especially in multi-step calculations, such as (3.2 - 1.65) x (15.6 - 5.77).

Vocabulary

The following are used as important aspects of helping students with the technical vocabulary of Mathematics:

- Use of a student revision booklet
- Using a variety of words that have the same meaning e.g. add, plus, sum
- Encouraging students to be less dependent on simple words e.g. exposing them to the word multiply as a replacement for times
- Discussion about words that have different meanings in Mathematics from everyday life e.g. take away, volume, product etc
- Highlighting word sources e.g. quad means 4, lateral means side so that students can use them to help remember meanings. This applies to both prefixes and suffixes to words
- Keywords and definitions will appear on topic assessments

Students 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 student 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, wondering what it means and losing confidence in his / her ability to answer the question. The instant recall of vocabulary and meanings can be improved through flash card activities in starters.

Measures

We know this is an area that we need to help students with so that they can use all the units of measurement confidently, converting between them and, perhaps most importantly, having a sense of the relative size of them and visualising what a particular dimension looks like.

IV Transfer of Skills:

The Mathematics team will provide guidance to other subject areas on how to teach and assess mathematical skills within their subject. They will make references to the applications of Mathematics in other subject areas and give contexts to many topics. Other curriculum teams will build on this knowledge and help students to apply them in a variety of situations. Liaison between curriculum areas is vital to students being confident with this transfer of skills and the Maths team willingly offers support to achieve this.

The transfer of skills is something that many students find difficult. It is essential to start from the basis that students realise it is the same skill that is being used; sometimes approaches in subjects differ so much that those basic connections are not made.
Starter activities be used to rehearse and sharpen key skills so that students gain more from the forthcoming application in the other subject. Teachers from other subjects may ask a member of the Mathematics department to support them where timetabling allows.

The Maths Department link endeavours to make other subject areas more aware of the underlying maths skills and approaches that go with the applications that they use. For example SCIENCE – calculating with formulae, 3 way relationships and plotting graphs.

Monitoring

Analyse and interpret data on students' performance against school expectations and other comparative data to establish if there is a raising of standards in Numeracy. There will be monitoring of students' work by regular book/file scrutiny to ensure quality, consistency and to implement strategies for improvement. Monitoring an overview of the experience of students in each curriculum area will take place through student interviews.