ST. ILLTYD'S CATHOLIC HIGH SCHOOL
NUMERACY ACROSS THE CURRICULUM POLICY
MAY 2017

What is Numeracy?
"The ability to understand and work with numbers". (Oxford English Dictionary)

Numeracy is a proficiency which involves confidence and competence with number, measures, problem solving and handling data skills. It requires an understanding of the number system, an array of computational skills and an ability to solve number problems in a wide range of contexts. Numeracy also demands understanding of the ways in which information is gathered and presented.

Numeracy contributes to and draws from many subject areas of the curriculum. Experience of numeracy across the curriculum allows pupils to appreciate the importance of numeracy in their lives by making the links explicit.

Exemplifying applications of numeracy from other subjects within the mathematics lesson allows pupils to make connections in contexts that pupils know and helps develop their understanding further.

Numeracy is a key-skill in the curriculum and as such, becomes a life skill. It equips pupils with a powerful set of tools with which to understand the world.

Numeracy implies:

- Fluency with numbers and the ability to make use of mathematical skills, enabling a person to cope with the practical mathematical demands of everyday life.
- An appreciation and understanding of information presented in a mathematical form.

Taken together, these imply that a numerate person should be able to appreciate and understand some of the ways in which mathematics can be used as a means of communication.

The development of students' numeracy skills is essential to whole-school improvement; by improving the numeracy skills of all students, standards across the curriculum will rise.

Effective use of numeracy is crucial to successful learning in all subject areas of the curriculum, each of which can contribute to developing numeracy skills through its own distinctive opportunities and demands. **It follows that all teachers are teachers of numeracy.**

The staff at St Illtyd's Catholic High School are therefore committed to working together across the curriculum:

• to promote students' personal confidence, resourcefulness and independence in numeracy;

• to raise students' numeracy attainment- both productive and receptive - at every level of ability, and in all subject areas.

Developing Numeracy Skills.

Numeracy skills are absolutely essential in order for young people to reach their potential whether they are planning to enter further or higher education or the employment market. The National Literacy Programme and the National Numeracy Programme set out the actions the Welsh Government intends to implement to improve literacy and numeracy standards in Wales. **National Literacy and Numeracy Framework, January 2013, Information document no: 120/2013**

Aims of Numeracy Policy:

- to enhance standards in numeracy across the curriculum;
- to develop and extend the numeracy of all students in every area of the curriculum
- so that they become increasingly confident in their ability to communicate;
- to enhance standards in aspects of subjects where numeracy is a major contributor;
- to enable students to transfer numeracy skills across subject areas;
- to ensure consistency of approach;
- to ensure progression in the use and application of numeracy across the curriculum;
- to recognise that all staff are teachers of numeracy and that pupils development is a
- responsibility that we all share, not the exclusive responsibility of the mathematics
- department;
- to increase awareness amongst teachers of the contribution that numeracy skills can
- make to each curriculum area and how cross-curriculum links can be developed
- within the mathematics lesson;
- to increase confidence of all staff in their ability to deliver and assess correctly the
- numeracy that occurs naturally in their subject;
- to help pupils appreciate the importance of mathematics in their lives;

Raising Achievement through Numeracy

The development of numeracy is an entitlement for all pupils and a responsibility of all teachers.

Numerate pupils should:

- have an awareness of the size of a number and where it fits into the number system;
- know number facts such as number bonds and multiplication facts with confidence;
- be able to calculate accurately and efficiently, both mentally and using written
- methods, drawing on a range of strategies
- recognise when it is appropriate to use a calculator and be able to do so effectively;
- make sense of number problems and recognise the steps needed to solve them;
- explain their methods and reasoning using correct mathematical terminology;
- judge whether their answers are reasonable and adopt suitable checking strategies;
- suggest suitable units for measuring and make sensible estimates of measurements;
- be able to interpret graphs, diagrams, charts and tables, drawing conclusions from them.

The Numeracy element of the Literacy and Numeracy Framework is divided into two sections, procedural and numerical reasoning.

Procedural
Within the numeracy component of the LNF "Procedural Skills" are broken down into three strands.

Teachers will aim to develop procedural skills by:

- Using number skills – the fundamental skills needed to be comfortable with using and manipulating numbers when carrying out procedures.
- Using measuring skills – knowing what measurements to use in which context, what standard units to use and to what precision.
- Using data skills – representing the results of tackling a problem that involves handling data in several ways.

Numerical Reasoning
Developing numerical reasoning skills in the National Literacy and Numeracy Framework (LNF) reflects all of these skills in the process of applying and using procedural (mathematical) skills in a variety of contexts.
In the classroom, a teacher's questions are central to the development of learners' reasoning.

Teachers will aim to develop numerical reasoning skills by:

- prompting learners to analyse, justify and evaluate their problem-solving strategies. For example, learners can be asked to revisit data in a systematic way so that conjectures about patterns and relationships in the data are more focused.

- prompting learners to strengthen the validity of their justifications by checking whether they have tested all possible cases, or found all the possibilities that meet particular conditions.

Several different questions can be useful in probing learners' thinking.

- Why do you think that . . . ?
- Can you explain why that is right?
- How do you know?
- How did you reach that conclusion?
- What might explain that . . . ?
- How is that possible?
- Can you show me . . . ?
- Is there another way . . . ?
- What explanation do you think is best . .?
- Have you tried all the possible cases?
- Does it always work? Why?
- What do you notice when . . . ?

- once learners' thinking is secure, using 'What if?' questions to promote new ideas and to extend the scope or context of the problem.

It is essential that learners are provided with opportunities to practice and extend their skills in these areas and to gain confidence and competence in their use. These opportunities should be age appropriate and in context, relevant to the subject area.

Responsibilties

Assistant Headteacher – Inclusion
(DJ)

1. to monitor and evaluate whole-school provision as set out in the School Improvement Plan, departmental improvements plans and schemes of
work through departmental annual numeracy review, work scrutinies, lesson observations and pupil voice interviews;
2. to ensure that the school's system of data
collection provides adequate evidence of
students' numeracy levels, and that staff
understand how to interpret it;
3. to develop and oversee the school's numeracy policy.

Numeracy Co-ordinator (EL)

1. to analyse KS3 National Test Results in Numeracy and identify and set Year Group specific numeracy targets for all subjects across the curriculum based on diagnostic of results;
2. to support numeracy objectives for departments with specific LNF responsibility for particular 'strands' of the LNF by providing materials and suggesting strategies, and through coaching and peer observations;
3. to support numeracy targets and objectives in all subjects across the curriculum by providing displays; suggesting materials and strategies; and through coaching and peer observations;
4. to take a lead in delivering INSET in Numeracy Subject Leader Workshops including sharing best practice, marking and moderation of assessments, and reporting;
5. to identify students in need of numeracy support, and work with the Numeracy Intervention Teacher(s) to ensure effective additional provision for these students;
6. To develop and coordinate the delivery of termly 'mock' National Numeracy Tests for KS3;
7. to raise the profile of numeracy across the school;
8. To assist with annual departmental numeracy reviews and work scrutinies.
9. to keep colleagues up-to-date on KS3 numeracy initiatives in Mathematics and how they can support numeracy development in other subjects.

Numeracy Intervention Teacher(s)

1. to work with the school's numeracy co-ordinator to identify those students who require intensive numeracy support;
2. to liaise with the parents of such students,
keeping them informed of provision and progress;
3. to liaise with students' subject teachers to
identify specific needs;
4. to develop appropriate schemes of work and tracking procedures;
5. to produce and disseminate at key assessment points an analysis of student progress in numeracy;

6. to monitor and evaluate the success of the
Programme.

Subject Leaders/Numeracy Leaders

1. to incorporate into their schemes of work the numeracy objectives for their subject area from the KS3 NLNF;
2. to establish the requirements that the students will need to be
familiar with, in order to succeed;
3. to identify opportunities to meet numeracy targets established from KS3 National Numeracy Test Results in their subject area/schemes of work;
4. to ensure that numeracy objectives are recorded in the department through regular pupil work scrutinies;
5. to analyse and monitor the levels of attainment/progress within their subject area at key tracking points, with a particular focus on boys' numeracy in relation to that of girls';
6. to ensure that opportunities for learning through numerical reasoning (in addition to procedural) are identified;
7. to ensure that ICT is being used as a means of improving standards of numeracy;
8. to oversee the setting-up and maintenance of numeracy displays in departmental classrooms.

Subject Teachers

1. to incorporate into lesson planning the numeracy targets for their subject area from the KS3 LNF;
2. to be familiar with the numeracy levels of students in their teaching groups, and match tasks and materials accordingly;
3. to work with the ALN Department
and their subject Teaching Assistant(s) in developing materials and approaches for those students who require numeracy support;
4. to ensure that MAT students with high levels of numeracy are provided with appropriately challenging tasks and materials;
5. to record and make use of assessment data
which provides information about student
numeracy, specifically: KS3 National Test results in procedural numeracy and numerical reasoning.
6. to set short-term numeracy targets, when
appropriate (e.g. encourage pupils to calculate their own percentage scores from any and all test and examinations. They should then be able to relate their scores to appropriate grades within a subject.);
7. to ensure that numeracy targets are displayed on classroom walls and
discussed as appropriate with learning objectives.

Additional Major Roles

The Maths Department has a major role to play in developing student numeracy and will consequently have additional, more specific, responsibilities to those outlined above – especially at KS4.

The Additional Learning Needs Department provides targeted intervention to students identified as achieving below 85 in National Tests, and support for students with SEN/ALN statements.