Understanding Underachievement in Mathematics / Numeracy
The purpose of this document is to promote whole school discussion around the issue of underachievement

Northern Ireland Education & Library Boards
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What is underachievement?

Monitoring and Evaluating Pupil Progress

How?
Support strategies

Who?
Indicators
Quantitative Qualitative

Why?
Issues
T & L Non - T & L

Reflection and identification of potential action

Effective Use of Data
Section 1: What is Underachievement?

**Underachievement** is used to describe a situation where performance is below what is expected based on ability. It can apply at the level of an individual pupil or describe a class or school, or indeed a system.

Teachers are able to use their professional judgement to assess if a pupil is underachieving. This can include classroom observation and analysis of formative assessment or other data as appropriate.

Low achievement is different from underachievement. **Low achievement** is where a pupil is achieving to the full extent of her or his ability, but is well below average compared to her or his peers.

**Count Read: Succeed – A Strategy to improve outcomes in literacy and numeracy, Department of Education March 2011** (page 4):

**Exploring underachievement**

- In pairs, discuss the statements provided in Appendix 1a: Professional Development materials. Sort the statements into those you agree with and those you disagree with. Two blank cards have been provided to facilitate an issue that may arise in your discussion that has not already been included. Appendix 1b can be used to summarise the level of agreement amongst staff – identify those statements where there is or close to a 50-50 split with respect to agreement and disagreement.

- Share your outcomes with the whole group trying to come to an agreed understanding of what underachievement means in your school context. The questions in 1c can be used to facilitate achieving a shared understanding.
Section 2: Who are the underachieving pupils?

Underachieving pupils can be identified using both quantitative and qualitative information, supported by teachers’ informed professional judgement. Teacher observation records can also provide evidence of potential pupil underachievement, especially in Foundation Stage.

Quantitative Indicators:

Inter-Board Literacy and Numeracy Coordinator training (2010) provided a common set of assessment tools to support the analysis of pupil performance data, including the identification of underachieving pupils (see Appendix 2; Overview of P3-P7 performance data and Appendix 5: Underachievement at Key Stage level). Schools have a wide range of quantitative data which can be used to provide evidence of pupil underachievement. C2K Assessment Manager is available to collate and analyse pupil data. Indicators of underachievement could be:

- Where standardised score of attainment (e.g. PiM, statutory computerised assessment) is significantly lower (by for example 10 points) lower than standardised score for reasoning ability (e.g. NRIT, CAT etc)

- Where the pupil has made low progress as identified by comparison of predictive and actual PiM standardised scores

Reliability of data is critical to ensure accurate decisions are made on whether or not a pupil is actually underachieving. Schools should consider the ‘robustness’ of the assessment processes carried out exactly as identified in the PiM teacher’s manual as well as the impact of a pupil’s literacy level potentially impeding their numeracy assessment (e.g. teacher may read test questions to the pupil if necessary).
Qualitative Indicators:

Formative classroom observation is extremely valuable in identifying underachievement and should be employed throughout the school year. Tackling School Underachievement (July 2008) highlights Montgomery’s research which suggests that the presence of five or more of the following indicators should lead teachers to investigate the possibility that a pupil is underachieving:

- Inconsistent pattern of achievement in different subjects
- Inconsistent pattern of achievement within individual subjects
- Discrepancy between ability and achievements, with ability higher
- Lack of concentration
- Daydreaming
- Clowning and other work-avoiding strategies
- Poor study skills and habits
- Non-completion or avoidance of assignments
- Refusal to write anything down
- Over active and restless
- Over-assertive and aggressive
- Over-submissive and timid
- Inability to form and maintain social relationships with peers
- Inability to deal with failure
- Avoidance of success
- Lack of insight about self and others
- Endless talking – avoiding actually doing anything
- Poor literacy skills

Both Quantitative and Qualitative Indicators emphasise the importance of assessing the potential of the individual. Teachers are urged to identify students with the potential to achieve, not just those students who have achieved.
Section 3: Why are some pupils underachieving? - Identifying Possible Causes

Below is an overview of possible causes for pupil underachievement which are considered in more detail on pages 8-21

A Teaching and Learning Issues:

**A1 Maths Subject-Specific (p8-10)**
- Gaps in knowledge and understanding
- Weaknesses in some areas of mathematics compared with others
- Poor understanding of mathematical concepts
- Lack of ability to recall basic number facts
- Unable or unwilling to use a range of mental calculation strategies

**A2 Using Mathematics across the curriculum (p11-13)**
- Difficulty in making and using connections within mathematics
- Unable to connect mathematics with real world and/or own interests
- Difficulty in identifying and using patterns to help with calculations and making generalisations
- Difficulties with comprehending the language of mathematical word problems
- Lack images to visualise mathematical situations
- Difficulty in applying knowledge and skills in unfamiliar situations

**A3 Thinking Skills and Personal Capabilities (p14-16)**
- Prefer to work within comfort zone on routine activities
- Unwilling to take risks – want to get everything right
- Difficulty in making choices and decisions
- Difficulty in discussing methods and ideas with others, and working collaboratively
- Unwilling to respond to questions
A4 Assessment for Learning (p18)
• Believe mathematics is about “doing work” only – unaware of own learning
• Making little apparent progress in raising achievement

B  Non-Teaching and Learning Issues (p18-21)
• Anxiety about own achievement: self-fulfilling prophecy
• Negative parental attitude
• Inconsistent attendance
• Behavioural Issues
• Withdrawal from mathematics lessons
• Medical issues
• Class size
• Bullying
• Attended several different schools
• Family issues
• Newcomer pupils
Reflection and identification of potential action

Consider each of these self-evaluation prompts below, record your school’s current position and decide on appropriate action. This process could provide a record for a school to demonstrate some of the actions they are using to address continuing underachievement (Count, Read: Succeed, p37)

A1 Teaching and Learning Issues: Maths Subject-Specific

<table>
<thead>
<tr>
<th>Why are pupils underachieving?</th>
<th>POINTS TO CONSIDER</th>
<th>CURRENT POSITION</th>
<th>ACTION</th>
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<tbody>
<tr>
<td>Gaps in knowledge and understanding</td>
<td>• Are all teachers confident to deliver all aspects of the numeracy curriculum?</td>
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<td></td>
<td>• Is there a whole school overview of the mathematics curriculum showing progression in each area of mathematics?</td>
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<td></td>
<td>• Do teachers' medium and short term plans accurately reflect this overview?</td>
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<td></td>
<td>• Are these plans reflected in the pupil's activities: practical, oral and written?</td>
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<td></td>
<td>• Do teachers regularly employ Assessment for Learning techniques to ensure effective formative assessment is carried out for every pupil?</td>
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<td></td>
<td>• Does scheme of work / medium term planning set out a range of activities which allow different learning styles to be catered for?</td>
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<td></td>
<td>• Is the implementation of planning monitored through classroom observations?</td>
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<td></td>
<td>• Do pupils have the opportunity to self-assess? Do teachers take account of this?</td>
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<td></td>
<td>• Do teachers reflect on impact of their teaching and adjust future planning accordingly?</td>
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<tr>
<td>Why are pupils underachieving?</td>
<td>POINTS TO CONSIDER</td>
<td>CURRENT POSITION</td>
<td>ACTION</td>
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</tbody>
</table>
| Weaknesses in some areas of mathematics compared with others | • Are all teachers familiar with the curriculum requirements in all areas of mathematics?  
• Does the whole school overview show that pupils receive regular experiences in different areas of mathematics throughout the year? | | |
| Poor understanding of mathematical concepts | • Are teachers confident and competent in their own understanding of key mathematical concepts?  
• Do teachers have access to guidance on how to develop robust understanding of key concepts in mathematics?  
• Are methods to ensure understanding of key concepts agreed and implemented in a consistent way across all year groups to ensure continuity and progression?  
• Are teachers aware of some pupils’ possible misconceptions that could be restricting their understanding of key mathematical concepts? | | |
### POINTS TO CONSIDER

<table>
<thead>
<tr>
<th>Why are pupils underachieving?</th>
<th>POINTS TO CONSIDER</th>
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</table>
| Lack of ability to recall basic number facts | • Is there a whole school progression for quick recall of number facts?  
• Do teachers use a range of strategies and activities designed to help pupils build up their bank of known number facts? (e.g. using known facts to help with unknown facts)  
• Do teachers assess individual pupils in their ability to recall number facts?  
• Is the learning of number facts part of personal targets for each pupil? | | |
| Unable or unwilling to use a range of mental calculation strategies | • Are pupils introduced to a range of calculation strategies in a planned, coherent and progressive manner?  
• Are pupils encouraged to discuss and compare different strategies?  
• Are pupils clear that their strategies need to be efficient and effective?  
• Do pupils have experience of using a mental approach to calculation across all areas of mathematics?  
• Is the focus on mental calculation maintained throughout the school? | | |
### A2 Teaching and Learning Issues: Using Mathematics across the curriculum

<table>
<thead>
<tr>
<th>Why are pupils underachieving?</th>
<th>POINTS TO CONSIDER</th>
<th>CURRENT POSITION</th>
<th>ACTION</th>
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</thead>
<tbody>
<tr>
<td><strong>Difficulty in making and using connections within mathematics</strong></td>
<td>• Do pupils recognise the relationship between + and -; × and ÷; and use this to check calculations?</td>
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<td></td>
<td>• Are pupils encouraged to use known facts to work out calculations? (e.g. use known fact 4 + 3 to work out 24 + 3)</td>
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<td></td>
<td>• Do pupils have experience of using their understanding of mathematical operations to aid calculation? (e.g. Given that 30 × 8 = 240, calculate 29 × 8)</td>
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<td></td>
<td>• Are pupils given opportunities to use informal jottings to support their mental calculation?</td>
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<tr>
<td><strong>Unable to connect mathematics with real world and/or own interests</strong></td>
<td>• Do pupils have the opportunity to contribute to the planning process? (e.g. deciding to investigate an issue of their own choice using a range of mathematical techniques)</td>
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<td></td>
<td>• Do teachers help pupils to connect mathematics with real life? (e.g. pupils running a small business within school, inviting local business people as guest speaker)</td>
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</tbody>
</table>
### Why are pupils underachieving?

#### Difficulty in identifying and using patterns to help with calculations and making generalisations

- Do pupils have sufficient experience of using patterns to derive unknown number facts? (e.g. using doubling and halving to support calculation of $35 \times 6$ as $70 \times 3 = 210$)
- Are pupils encouraged to work systematically? (e.g. by putting results into a table, to enable them to see patterns and make generalisations)

#### Difficulties with understanding the language of mathematical word problems

- Is there a systematic whole school progression for the introduction of increasingly sophisticated mathematical language?
- Is the agreed whole school progression of mathematical language consistently implemented from P1 to P7?
- Do teachers model precise mathematical language when talking to pupils, and share this with parents when appropriate?
- Do teachers provide opportunities for pupils to talk about their understanding of key mathematical concepts and identify potential misconceptions as early as possible?
- Is mathematical language used and explained in classroom displays?
- Do pupils have experience of using appropriate oral and written mathematical language to describe their work?
### Primary Mathematics Resource

#### Why are pupils underachieving?

<table>
<thead>
<tr>
<th>POINTS TO CONSIDER</th>
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<tbody>
<tr>
<td><strong>Lack images or models to visualise mathematical situations</strong></td>
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<tr>
<td>• To what extent are new mathematical concepts introduced practically?</td>
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<tr>
<td>• Do teachers make effective use of language to make the connections between practical activities and the resulting abstractive thought processes? (e.g. using consistent mathematical language when moving from a practical model for decomposition to the written recording procedure)</td>
</tr>
<tr>
<td>• Are pupils able to visualise concepts in their own minds after using practical methods? (e.g. visualising a number line to help calculate 9 + 3 mentally)</td>
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#### Difficulty in applying knowledge and skills in unfamiliar situations

<table>
<thead>
<tr>
<th>POINTS TO CONSIDER</th>
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<tbody>
<tr>
<td>• Is there a balance between work of a routine nature and more open-ended and investigative activities?</td>
</tr>
<tr>
<td>• Are pupils able to use a variety of problem-solving strategies?</td>
</tr>
<tr>
<td>• Are pupils encouraged to make choices about the strategies they use, and compare these with others?</td>
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<tr>
<td>• Are pupils able to choose appropriate materials, equipment and mathematics to use in a particular situation?</td>
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<tr>
<td>• Are pupils given opportunities to explore ideas, make and test predictions and think creatively?</td>
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</table>
# A3 Teaching and Learning Issues: Thinking Skills and Personal Capabilities

<table>
<thead>
<tr>
<th>Why are pupils underachieving?</th>
<th>POINTS TO CONSIDER</th>
<th>CURRENT POSITION</th>
<th>ACTION</th>
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</table>
| Prefer to work within comfort zone on routine activities | • Do pupils have sufficient opportunity for problem – solving and investigative work across a range of settings – whole class, small groups, paired and individual work?  
• Are pupils encouraged to make decisions on which methods and strategies to apply in a range of contexts?  
• Is there a shared understanding among teachers as to the type of activities which are effective in developing the skills contained within the Requirements for Using Mathematics? | | |
| Unwilling to take risks – want to get everything right | • Do all teachers have sufficient mathematical and pedagogical skills to support pupils in open-ended investigative work, encouraging them to work independently without reliance on the teacher?  
• Do pupils have experience of deciding how to present their own work?  
• Is there agreement amongst teachers on a range of strategies which will help raise pupils’ confidence to “have a go”?  
• Are there regular opportunities for pupils to experience more open-ended activities which don’t have a pre-determined correct answer? | | |
### Why are pupils underachieving?

<table>
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<tr>
<th>POINTS TO CONSIDER</th>
<th>CURRENT POSITION</th>
<th>ACTION</th>
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<tr>
<td><strong>Difficulty in making choices and decisions</strong></td>
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<td>• Are activities open-ended enough to allow room for pupils to decide on their own methods and strategies?</td>
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<td>• Are pupils given the opportunity to select the mathematics and materials they want to use to complete a task?</td>
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<td>• Do the opportunities provided for the pupils encourage systematic development of their confidence in decision making?</td>
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<tr>
<td><strong>Difficulty in discussing methods and ideas with others, and working collaboratively</strong></td>
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<tr>
<td>• Are pupils given tasks which require them to work together as a group?</td>
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<td>• Have pupils been given support in how to work as a group?</td>
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<td>• Do pupils have regular experience of talking together about the ideas and methods they use in mathematics?</td>
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<tr>
<td>• Are the skills involved in group-work used as Learning Intentions, and assessed by teacher and / or pupils?</td>
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</table>
## Why are pupils underachieving?

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<th>POINTS TO CONSIDER</th>
<th>CURRENT POSITION</th>
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<tr>
<td><strong>Unwilling to respond to questions</strong></td>
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<tr>
<td>• Do teachers understand the range and purposes of different question types?</td>
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<td>• Do teachers use a range of question types for different purposes?</td>
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<td>• Are pupils given “thinking time” to formulate answers?</td>
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<td>• Are pupils able to work with a “thinking partner” before answering questions</td>
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<td>• Do teachers use follow-up questions to extend thinking?</td>
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<tr>
<td>• Do teachers use pupils’ responses to evaluate pupils’ level of understanding?</td>
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<tr>
<td>• Are pupils given opportunities to ask their own questions?</td>
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<td>• Do teachers use pupil-derived questions as a whole class learning opportunity?</td>
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## A4 Teaching and Learning Issues: Assessment for Learning

<table>
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<tr>
<th>Why are pupils underachieving?</th>
<th>POINTS TO CONSIDER</th>
<th>CURRENT POSITION</th>
<th>ACTION</th>
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</thead>
</table>
| **Believe mathematics is about “doing work” only – unaware of own learning** | • Do teachers plan pupils’ activities with the aim of achieving a specific learning intention?  
• Are learning intentions shared with pupils at the beginning of each new activity?  
• Do pupils have opportunities to assess their own learning? Do teachers take account of this? | | |
| **Making little apparent progress in raising achievement** | • Are teachers aware of pupils’ prior learning? (e.g. samples of work from previous classes, tracking standardised scores information, statutory assessment levels)  
• Does each pupil have agreed personal short term targets for learning?  
• Is the progress towards meeting these targets continuously monitored by both pupil and teacher?  
• Are learning activities appropriately scaffolded to meet the needs of all pupils?  
• Do pupils receive feedback (written and oral) on their work which details how they can improve?  
• Do pupils take account of and respond to this feedback? | | |
B Non-Teaching and Learning Issues:

<table>
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<tr>
<th>Why are pupils underachieving?</th>
<th>POINTS TO CONSIDER</th>
<th>CURRENT POSITION</th>
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</table>
| Anxiety about own ability: self-fulfilling prophecy | • Do teachers promote self-confidence and enthusiasm for mathematics?  
• Do pupils have the opportunity to work with a partner or small group?  
• Do pupils have clear and achievable personal targets?  
• Are pupils involved in reviewing own learning and identifying progress made and successes?  
• Is individual pupil progress and success celebrated?  
• Are pupils aware that success is defined by identifying their own progress, not by comparing themselves with others?  
• Is there an effective PDMU programme in order to raise confidence and self-esteem?  
• Does co-ordinator lead a process of promoting a positive attitude towards, and enjoyment of, mathematics across the school? | | |
## Why are pupils underachieving?

### Negative parental attitude to school; to mathematics or to child

- Have parents been informed as to nature of mathematical learning activities in school?
- Have parents been invited to parents’ nights aimed at creating a positive attitude to mathematics?
- Have parents attended parent/teacher meetings?
- Does school run any programmes aimed at improving parents understanding of mathematics? (e.g. school-based mathematics workshops, externally accredited courses for parents)
- Have parents been given guidance on how best to help their child improve at mathematics?

### Inconsistent attendance

- Has this issue been raised with parents?
- If appropriate, has EWO been informed?
- Is there any form of learning support for pupils returning after absence?

### Behavioural issues

- Is the Behaviour /Discipline Policy effective?
- Is this Policy implemented in a consistent manner?
<table>
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<tr>
<th>Why are pupils underachieving?</th>
<th>POINTS TO CONSIDER</th>
<th>CURRENT POSITION</th>
<th>ACTION</th>
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</thead>
</table>
| Withdrawal from Maths lessons e.g. for sports or music tuition | • Has timetable for such activities been cross-referenced with academic timetable?  
• If necessary, has timetable been adapted to avoid clashes? | | |
| Medical issues - e.g. sight, hearing; or other issues leading to frequent absence or inability to concentrate | • Is class teacher aware of any medial issues, and of the necessary steps to compensate for them?  
• Are arrangements made for out of school learning where absences are frequent and / or lengthy?  
• Is there any form learning support for pupils returning after absence? | | |
| Class size | • Have SMT considered fully the impact on teaching and learning when making decisions on size of classes or make up of composite classes? | | |
### Why are pupils underachieving?

<table>
<thead>
<tr>
<th>POINTS TO CONSIDER</th>
<th>CURRENT POSITION</th>
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<td><strong>Bullying or other reasons to feel unsafe or at risk in school</strong></td>
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<tr>
<td>• Is the Pastoral Care Policy being implemented effectively?</td>
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<tr>
<td>• Are pupils aware of what they should do if they feel unsafe or at risk in school?</td>
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<tr>
<td><strong>Attended several different schools</strong></td>
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<td>• Is there a process for initiating new pupils, including assessment of their</td>
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<td>current mathematical knowledge and understanding?</td>
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<td>• Do new pupils have a sound understanding of key concepts to enable their</td>
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<td>learning to progress with their peers?</td>
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<td>• Is there an effective process for transfer of relevant information from their</td>
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<td>previous school?</td>
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<tr>
<td><strong>Family issues</strong></td>
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<tr>
<td>• Is school working with other support agencies to ensure pupil can learn as</td>
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<td></td>
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<td>effectively as possible when in school?</td>
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<tr>
<td><strong>Newcomer Pupils</strong></td>
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<td>• Is there an effective programme for integrating pupils with English as an</td>
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<td>additional language?</td>
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Section 4: HOW? Support strategies to address underachievement

Count, Read: Succeed sets out the role of teachers in supporting pupils’ development of literacy and numeracy and makes explicit the priority of providing high quality teaching and learning for all pupils.

The five things that class or subject teachers will do to raise standards in literacy and numeracy are, in order:

1. provide high-quality teaching for all pupils;
2. address underachievement as soon as it emerges;
3. address continuing underachievement with support from other staff in the school;
4. address continuing underachievement with support from outside the school; and
5. meet the needs of pupils after a non-statutory assessment through the SEN framework.

High quality teaching of all pupils: by the class or subject teacher

The class or subject teacher will continue to raise and maintain standards of literacy and numeracy by:

A having high expectation for all pupils and sharing these with pupils and their parents
B employing effective, high quality classroom teaching practice
C undertaking robust tracking and monitoring of pupils’ progress, in particular to identify quickly any emerging underachievement
D engaging with, and reporting to parents, including through the annual pupil report

Count Read: Succeed – A Strategy to improve outcomes in literacy and numeracy, Department of Education March 2011 (page 33 and 34):
Both **Count Read: Succeed** and **Better Numeracy in Primary Schools** provide useful indicators of high quality teaching and learning.

When delivering high quality teaching (Point 1) within Count Read: Succeed

**In the most effective practice:**
- the teachers build effectively on the children’s previous knowledge and experience;
- the teachers have realistically high expectations of what the children can achieve; the children are challenged to extend their learning and appropriate support is provided when children are experiencing difficulties;
- practical approaches are used effectively to develop mathematical concepts and to lay the foundation for more abstract work;
- the use of open-ended questions, problem-solving tasks and investigative activities develops the children’s capacity to reason logically, think flexibly, and make and justify decisions;
- the teachers make effective use of routines and incidental opportunities to promote mental mathematics;
- the children are given appropriate time and encouragement to communicate and explain their mathematical thinking, to articulate the processes they use, to ask questions and to talk about their learning;
- the teachers use the learning intentions and success criteria throughout the lesson to focus the children’s attention on and consolidate learning;
- the interactions between the adults and children are consistently of a high quality;
- the children’s mathematical knowledge and skills are developed systematically across the school;
- the children make good year-on-year progress;
- the children can draw effectively on a range of mental mathematics strategies; they are flexible in their mathematical thinking;
- the children work well together in groups and co-operate effectively during practical sessions;
- the children engage actively in their learning and are confident in working independently and in applying their knowledge, understanding and skills in unfamiliar contexts; and
- the children talk confidently about their thinking and learning in mathematics.

**Better Numeracy in Primary Schools** (ETI, March 2010)
When addressing underachievement as soon as it emerges (Points 2 and Point 3, Count Read: Succeed),

From your previous whole school discussion in working through Section 3 (pages 6-21) the possible causes of underachievement identified will be many and varied. It may be useful now to prioritise your actions under four key headings:

- Numeracy – Leadership and Management,
- Numeracy – Teaching and Learning,
- Other curriculum areas - Teaching and Learning, and
- Non - Teaching and Learning issues

Appendix 2: Summary of key issues within underachievement in your school could be used to record the outcomes of this whole school discussion and agreed strategies to address underachievement.

Support materials that could be useful to identify the next steps include:

- Northern Ireland Curriculum
- Together Towards Improvement document
- Better Numeracy
- Northern Ireland Levels Of Progression for Using Maths
- Assessing Cross Curricular Skills guidance materials

Potential actions may need to be considered at senior management level, coordinator/class teacher level and at individual pupil level. For individual underachieving pupils, teachers may consider designing a personal plan based on their findings resulting from the above process, setting out clear and achievable targets within a given time scale. Appendix 3: Record of Support for Underachieving Pupils could be used to provide evidence for monitoring and evaluating progress. Appendix 4: Case Studies provide exemplars from a range of schools to address underachievement. Work can begin on designing a program of pupil support within your school which could be group based or individual intervention with targets that are time-bound and progress is reviewed regularly against these specific targets.
Improvement Cycle

Set targets and identify actions (timebound)

Review progress against targets

Identify underachievement and reason(s) for
Appendix 1a: Professional Development materials
Exploring understanding of underachievement

<table>
<thead>
<tr>
<th>Underachievement runs in the family</th>
<th>Parents have a part to play in underachievement</th>
<th>Boys underachievement is a myth</th>
</tr>
</thead>
<tbody>
<tr>
<td>There is no such thing as underachievement</td>
<td>All children at some stage will underachieve</td>
<td>Underachievement only relates to Literacy and Numeracy</td>
</tr>
<tr>
<td>Underachievement can be caused by the learning environment</td>
<td>Teaching methods have no impact on underachievement</td>
<td>Pupil performance is the best indicator of underachievement</td>
</tr>
<tr>
<td>Low achievers can only go so far</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Statement</td>
<td>Agree</td>
<td>Disagree</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>-------</td>
<td>----------</td>
</tr>
<tr>
<td>Underachievement runs in the family</td>
<td></td>
<td></td>
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<tr>
<td>There is no such thing as underachievement</td>
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<tr>
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<tr>
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<td></td>
</tr>
<tr>
<td>Pupil performance is the best indicator of underachievement</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix 1c: Thinking about underachievement
Questions to promote staff discussion

1. What do we mean by achievement?

2. What is underachievement? What does it look like in your classroom?

3. When does underachievement first emerge?

4. Is there a difference between low achievement and underachievement?

5. Is the school addressing underachievement? If so, how?
### Appendix 2: Summary of key issues within underachievement in your school

<table>
<thead>
<tr>
<th>Issues</th>
<th>Actions identified in Section 3</th>
<th>Agreed strategies to address underachievement</th>
<th>Progress</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numeracy – Teaching and Learning</td>
<td></td>
<td></td>
<td>Start date:</td>
</tr>
<tr>
<td>Numeracy – Leadership and Management</td>
<td></td>
<td></td>
<td>Start date:</td>
</tr>
<tr>
<td>Other Curriculum areas - Teaching and Learning</td>
<td></td>
<td></td>
<td>Start date:</td>
</tr>
<tr>
<td>Non-Teaching and Learning</td>
<td></td>
<td></td>
<td>Start date:</td>
</tr>
</tbody>
</table>
### Appendix 3: Record of support for underachieving pupils

<table>
<thead>
<tr>
<th>Names</th>
<th>Reasons for underachievement</th>
<th>Intervention</th>
<th>Progress</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Jan</td>
<td>June</td>
<td></td>
</tr>
</tbody>
</table>


Appendix 4: Case Study 1

Context (e.g. pupil background)
The pupils were identified at the start of P4 through on-going teacher assessment and observation. A group of pupils displayed a significant difference between their NRIT scores and a Progress in Maths standardised test. This was supported through teacher assessment by both the current P4 teacher and their previous P3 and Foundation Stage teachers – “Were there patterns of potential underachievement in previous years?”

What the school did?
• The group were targeted for additional support through discussion with SMT, assessment co-ordinator and Principal. The additional support and procedures to identify such needs in the future were identified as a school priority.
• The numeracy co-ordinator made effective use of all available performance data to identify areas for development; they wrote an action plan with tight targets and ensured these were included in the updated School Development Plan to maximise whole school commitment.
• The numeracy co-ordinator worked with the class teacher to clarify the specific areas for development and produce a series of intervention workshops for the pupils; success criteria and associated evidence were identified in advance.
• A part-time numeracy support teacher was employed on a short-term contract to provide focused support for the targeted pupils.

How the school was supported and managed?
• Close co-operation and communication with CASS, including the numeracy officer.
• Development of a tailored teacher-support programme including topics such as development of Processes and Problem-Solving in Maths and setting Number in context
• Targeted pupils supported through: class teacher intervention, Foundation Stage teacher support between 2-3pm and withdrawal by newly-appointed numeracy support teacher
• Evidence of progress towards targets and success criteria gathered in monthly reviews and summarised in an annual self-evaluation report.

Where to go to next?
• The group of pupils are now in P6 and data analysis shows that there is a significant reduction in disparity between NRIT and GL assessments. Most of the target group have entered the ‘average’ band and are coping well with the main learning intentions planned for the class.
• The numeracy co-ordinator has continued to maintain the high profile of numeracy throughout the school through use of INSET and regular staff meeting sessions.
• All teachers are better equipped to identify the early signs of underachievement through teacher assessment and procedures have been established to ensure that teachers know “what to do…and when”
• Since the targeted support and associated INSET took place, the school has seen a significant rise in Key Stage results, as ALL teachers adopted early intervention as a priority within their teaching. The school are now involved in continuous self-evaluation of their teaching and learning – “What is the impact upon the pupils? How do we know?”
Case Study 2 – Millennium Integrated Primary School, Saintfield

**Context:**
Millennium Integrated Primary School opened in September 2000 with 10 P1 children and grew each year with the addition of a new P1 intake. Therefore it was 6 years after the opening date before we had a full complement of classes. Today there are 202 children across P1 to P7 and an additional 26 children in the Nursery.
As a school we had always had a child centred approach and believed in early intervention to address any underperformance. From the very beginning we always valued teacher observations and judgements, whilst at the same time we trialled a number of more formal, standardised tests to be able to do more in depth analysis of achievement, learning and teaching within the school as standardised within the UK.
We also, in common with so many schools, talked to parents about the importance of children reaching their full potential, quoted this as an aim of the school within the school prospectus and within the school Mission Statement.

In those early years, we were, we felt, using data effectively to plan for the children within the weekly planning in numeracy, to determine additional withdrawal support and to look at the use of practical mathematical resources. Of course most of our efforts at this stage focused on children with low standardised scores, 85 and below and teacher observations which in the main matched the results. However we began to question ourselves on how could we be as sure as possible that all our children were reaching their full potential – Underachievement could be happening across all ability levels and we were really putting most of our efforts into our low achievers rather than focusing on underachievement wherever it was to be found. There was a growing awareness that we needed to do something differently if we were going to be able to know which of our children were underachieving and if we were going to be able to keep talking about ourselves as a school 'where children reach their full potential'!

**How was underachievement identified?**
- Initially all the children in the school were assessed using NRIT to give us an ability score. We didn’t particularly like this assessment tool feeling it was quite out-dated and having concerns in relation to the over-reliance on auditory processing. However, having a considerable number of children who had full IQ scores following a range of assessments completed by educational psychologists as part of the statementing process, we began to see that the NRIT was generally quite accurate in most cases.
- We also trialled the NFER Verbal and Non Verbal Reasoning assessments, particularly in P1 and P2 as the teachers in those 2 year groups were beginning to see how easy it could be to underestimate a child’s full ability especially if they were doing quite well!
- For the P3 to P7 children a class spreadsheet was generated which gave each child’s NRIT score followed by scores in each of the standardised assessments. After each of the standardised assessments either the value added on or if it was the case, the underachievement was recorded. Underachievement was highlighted in red - see below
- We were also analysing underachievement in relation to children not progressing 2 levels in the end of Key Stage Assessment Units from KS1 to KS2
<table>
<thead>
<tr>
<th>Class</th>
<th>NRIT</th>
<th>SRT</th>
<th>+/-</th>
<th>PIE</th>
<th>+/-</th>
<th>NFER Spelling</th>
<th>+/-</th>
<th>PIM</th>
<th>+/-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child A</td>
<td>106</td>
<td>114</td>
<td>8</td>
<td>120</td>
<td>14</td>
<td>110</td>
<td>4</td>
<td>90</td>
<td>16</td>
</tr>
<tr>
<td>Child B</td>
<td>99</td>
<td>90</td>
<td>9</td>
<td>88</td>
<td>11</td>
<td>86</td>
<td>13</td>
<td>110</td>
<td>11</td>
</tr>
<tr>
<td>Child C</td>
<td>128</td>
<td>116</td>
<td>12</td>
<td>114</td>
<td>14</td>
<td>128</td>
<td>0</td>
<td>115</td>
<td>13</td>
</tr>
<tr>
<td>Child D</td>
<td>84</td>
<td>90</td>
<td>6</td>
<td>96</td>
<td>12</td>
<td>92</td>
<td>8</td>
<td>95</td>
<td>11</td>
</tr>
</tbody>
</table>

**What Action**

- Using August Staff Development Days to raise awareness of the difference between low achievers and under achievers.
- Presentation to all staff on how well we were doing in terms of ‘value added’ and how important it was to celebrate this, using the statistics generated for each child, class and whole school from the statistics gathered through the proforma table above.
- Moving on to the underachievement and discussion about some of the surprises! Some of the children we were concerned about, and were giving extra provision to, were actually doing well (e.g. Child D) Some of the children we had no concerns about were in fact under achieving (e.g. Child C).
- Challenging the teachers to have high expectations for all children, to use the data on their class record sheet for the incoming year to have target children in order to reduce the % of children underachieving in their class in all of the standardised tests listed above.
- Moving from class targets to collective targets for P3 to P7 to reduce underachievement.
- Working to develop a school culture that analysing data and target setting involves everyone, not just the Assessment Team.
- Annual Report from the Numeracy Co-ordinator of the GL Assessment Progress in Maths - looking at results class by class focussing on trends, working towards conclusions (class by class analysis of strongest and weakest NI Curriculum Attainment Targets) and recommendations. (Individual teachers to look at their own weakest processes strand and reflect on how they will develop their teaching skills, possible training needs, feeding into targets on Numeracy Action Plans within the School Development Plan). Highlighting children
who made ‘Low Progress’ with teachers recording actions they will be taking within the classroom. Subsequently this is monitored by the Numeracy Co-ordinator throughout the year. Whole school individual question level analysis with a comparison over the last 5 years is also carried out.

• Using data and the discussions the data generates, to plan for future focus within the School Development Plan – e.g. Teaching Word Problems/ Mental Maths, etc.
• Use of INCAS alongside other data to analyse underachievement.
• Minimising the potential for underperformance by developing a Tracking Sheet for all children from P3 upwards – children levelled, targets set and monitored with samples of levelled work collected for monitoring – this has been our most effective tool for ensuring as many children as possible make 2 levels of progress from Key Stage 1 to Key Stage 2.
• Staff training, target setting for development of teaching skills and use of PRSD as a tool for continuous staff development.
• Purchase of resources to motivate learners, e.g. use of Nintendo DS to develop quick recall of number facts with children working to beat their previous personal best, Numicon as a very kinaesthetic approach to learning, use of ALTA in class settings and also for homework tasks.
• Setting up of Vertical Numeracy Groups (P3/P4 and P5/P6/P7) to tackle both Low Achievers and Under Achievers at the lower end of the ability range.
• Use of Individual Lines of Progression Booklets to track progress for a small number of children who need to be monitored more closely.

**Future Steps**

• Continue the cycle of analysis of data leading to action points for staff development needs and the setting of realistic targets which in turn leads to a continuous cycle of improvement in the standards of learning and teaching for all, but especially for those children underachieving.
• Explore and trial assessment tools which will help us to pinpoint the gaps in the children’s understanding of mathematical concepts and then plan for appropriate programmes of intervention.
• Continue to monitor any gender issues with underachievement trends. Up to now this has not been an issue.
Case Study 3 - St Patrick’s Primary School, Mayobridge

Staff decided that it was imperative that an intervention programme for Numeracy was set up, following the success last year (2010-2011) of our Literacy intervention programme and the success rate of pupils involved. ETI had recently rated our use of data in raising achievement of pupils as Very Good.

Initial work carried out to target underachievers:

- Detailed inset training for all teachers in looking at the ESAG document and grasping an understanding of the terminology ‘underachiever’/ ‘overachiever’. This terminology has been revisited very frequently in the past year to ensure all staff are empowered to be part of this new way forward whilst ensuring each child attains their personal academic potential.
- As Assessment Co-ordinator compiling an audit on current school practice and implementing new methods of testing with immediate effect.
- Looking at samples of end of year results in both Literacy (PIE) and Numeracy (PIM) and comparing these standardised scores with the standardised scores in NRIT.
- Working together as a whole staff and using end of year data and to place pupils into 3 categories Wave 1, Wave 2 and Wave 3.
- Defining what an underachiever is and to know how to pinpoint an underachieving pupil from the data available.
- If PIM/PIE was 10 or more above NRIT the pupil was categorised as an Overachiever.
- If PIM/PIE was 10 or more below NRIT the pupil was categorised as an Underachiever.
- This data was collated and made available in a new system of the class data portfolios, whereby each teacher had a file containing all the relevant data on the pupils in their class group (Waves, PIE, PIM, INCAS, NRIT and Benchmarking data).
- We made a conscious decision to target pupils who fell into Wave 2 as our initial focus for intervention programmes in both Literacy and Numeracy.
- Once a set of pupils was highlighted parents were consulted to ensure we had received their permission and to inform them of their role and how they could help their child achieve their academic potential.
- A new Monitoring, Evaluating and Review policy has been devised within St. Patrick’s, chiefly initiated by the new systems in place for Assessment. Assessment, Literacy and Numeracy Co-ordinators meet with individual members of staff each term to discuss the effectiveness of strategies to target pupils both in class and out of class/withdrawal groups.
- When meeting with teachers individually in term 1 and in term 2, a conscious effort was made for pupils in both wave 1 and 3 to be targeted within the classroom. Discussion centred around identifying suitable intervention strategies.

Current work to target underachievement:

- Detailed analysis took place in June 2011 i.e. PIM and PIE results were plotted against NRIT scores.
- Detailed analysis of end of Key stage assessments were also utilised.
- A report was compiled by the Assessment Co-ordinator, with the analysis of all pupils results following the administering of PIE and PIM in June 2011, comparing with NRIT scores. The report consists of listings of those who are underachievers and overachievers in each year group from P.4 to P.7.
- Each class group’s results were analysed using the group analysis sheets as provided by PIM test.
- Parent Information seminars were held to raise the profile of what we were doing to reiterate the importance of the parents’ role in supporting intervention programmes.
An initial audit was conducted in term 1 asking parents if they were interested in receiving additional support from the school for Literacy and Numeracy. The feedback from parents was encouraging and a more detailed audit is currently being compiled by the Literacy and Numeracy Co-ordinators to ensure this programme is as equally as effective as the pupil intervention programmes.

At the beginning of Term 1 this academic year, teachers used a staff day in August to analyse the data for their new class groups specifically analysing the Group data analysis sheet from PIM and PIE.

Early Intervention is now introduced for P.3. pupils which is provided by one of our staff who has specialist qualifications and experience in the Numeracy Catch Up programme.

The group analysis sheet was used when meeting with the individual teachers to look at specific aspects of Numeracy and how this could be addressed by them within their every day teaching and how individual pupil’s performance could be tracked. Such specific detail has been used by myself as Intervention teacher.

The Intervention teacher uses a timetable with 3 days assigned for Literacy Intervention and two days for Numeracy.

In this first term we have also analysed pupils INCAs results and combined all data into one document now for the start of term 2.

**Current Numeracy Intervention Programme:**

- Takes place on Thursday and Friday each week timetabling pupils from P.4 through to P.7 who are categorised as underachieving according to PIM analysis and are withdrawn for additional Numeracy support for 30/40 minute sessions over two days for a period of 10 weeks.
- Each session can have up to 6 pupils currently in wave 2.
- The first 5 weeks focused on strategies to improve mental calculation using SELB core competences and incorporating mathematical games and a wide variety of practical maths equipment to provide a Kinaesthetic approach to learning.
- The second 5 weeks of the programme focused on the application of number knowledge to Processes and problem solving activities (i.e. addressing Using Concepts and Solving Routine Problems areas as identified through PIM analysis).
- Informal feedback is given to teachers on a weekly basis on pupils’ progress and teachers highlight any areas of concern to the Intervention Teacher.
- Formal feedback also provided for teachers in mid term reviews and in analysis of data meetings- recorded on set proformas.
- In term two, we intend to target more pupils in Wave 1, as well as Wave 2, following the recent analysis of INCAs data when compared with NRIT.
- At the end of each 10 week session a report on the progress of individual pupils will be used to monitor the effectiveness/outcomes of our Numeracy Intervention programme.
Case Study 4 - Faughanvale Primary School, Greysteel

Context

Faughanvale Primary School is situated in the village of Greysteel in North Derry. It is a rural school with a catchment that comes primarily from the village of Greysteel but also from surrounding townlands on the boundary of both Limavady Borough and Derry City Council areas. The school has experienced a rising enrolment in recent years of just over 35% and currently has 163 pupils on role with 7 teachers and a Principal.

Who was Identified?

Children from P1-P7 who appeared to be struggling with their understanding in a range of numeracy related areas. The earlier in their education that they are identified the better.

How were children identified?

- **P1-P2** – There are no formal tests in these years, so the teachers’ observation and professional judgement is a significant factor. Teachers also discussed their concerns with the children’s previous teachers.
- **P3-P7** – In P3 comparisons are made in August between children’s chronological age and their PIM and MM scores. From P4-P7, comparisons are made in August between each child’s NRIT score and their PIM and MM scores. If the child’s maths scores are 5 or more below the NRIT/CA score these are the children we need to focus on. This group, however needed to be broken down further:
  a) If there was a very wide gap between NRIT/CA and Maths scores and if teachers agreed that these children were out of touch with the rest of the class, then they would be moved on to Stage 2 of the Code of Practice and an Individual Education Plan would be drawn up which would address specific difficulties.
  b) For the remaining children, teachers discussed each individual’s ability and were able to identify those who might need close monitoring to bring their scores up to at least a level commensurate with their NRIT score or Chronological Age.
  c) The Standardized testing also showed up children who had a natural ability in Numeracy and who were coping with ease in the day to day activities. Their scores identified them as overachievers. Teachers also monitored these children and set more challenging activities to enhance their performance.
- Teachers also look at the Key Stage Outcomes and have predicted Levels for all children in their classes. In May their actual Level is recorded and this information is shared with the Assessment Co-ordinator and Numeracy and Literacy Co-ordinators as well as the
teacher who will be receiving their new class in September. Staff have internally moderated Levels 1-5 in all 5 Attainment Targets and coupled with ALTA Maths for AT 2-5, have set in place a robust mechanism to measure standards throughout the school. Therefore, if children do not progress by 2 Levels in the end of KS Assessments, they too are considered as underachievers.

• The Numeracy Co-ordinator also analyses each class as they progress through the school. This enables her to look for trends in classes to identify both particular strengths and also areas for improvement. Staff training at Inset, focuses on these areas. This is a useful 2 pronged approach as it:
  a) raises awareness for the teacher, of strengths and areas for improvement within the class and,
  b) supports teachers who may need more guidance in specific areas of numeracy.

**What do we do to raise performance?**

• All teachers from P1-P7 complete a tracking grid identifying the children who need support. On it teachers record why they need to track each child and what targets they are going to set for each individual. These targets are measurable and time bound and through close monitoring and support, can help to achieve the ultimate goal of closing the gap in children’s performance over the course of the year. Teachers keep a portfolio of evidence which chronicles the progress the children are making and this is discussed with the Numeracy Co-ordinator on a routine basis as well as being shared with staff during Numeracy Inset meetings. When children have reached the set targets, new targets are devised and recorded. Throughout the process children are aware of the targets set for them and by the end of KS2, are more than capable of generating their own targets to improve their learning.

• The Numeracy Co-coordinator has also been able to withdraw groups from P4-P7 classes, 1 or 2 times a week, to focus further on specific concepts in which children may be experiencing some difficulties. During these sessions the focus is often on practical Maths activities as well as the use of Stile Mathematics and ALTA Maths.

• In the P3 class the school has introduced strategies following advice and information from the Catch Up Maths team in the SELB. This involves withdrawal on a 1-1 basis 3 times a week for a period of 6-8 weeks. The focus here is on the development of number concepts and spatial patterns within numbers.

• In P1 and P2 the teacher will, with the support of the Classroom Assistant, provide additional support for any children who need it.

• In May, P3-P7 children are tested and all teachers evaluate each child’s progress against their PIM, MM and NRIT scores. The information is analysed by the Numeracy Co-ordinator and forms part of the Planning for Numeracy for the next academic year. P1 and P2 children are tested in basic number activities and any areas of concern are raised with the Numeracy co-ordinator.
How do we sustain this?

- Keep the profile of Numeracy high in the school
- Continue to identify underachievers and intervene as early as possible.
- Through focused Staff meetings, address issues regarding Numeracy performance and standards
- Continue to monitor the achievement of all pupils and support their learning through the tracking format from P1-P7.
- Raise the focus on Processes in Maths as a tool to develop thinking skills across all areas of Numeracy
- Increase mathematical resources and use effectively to improve numeracy standards for all.
- Involve and inform post primary feeder schools of the progress made by children transferring to them and the interventions used.

Children who have been tracked will be tagged and their continued progress will be monitored throughout their years at school. This will be done using SIMS Assessment Manager to generate graphs and relevant tables in order to analyse individual, class and school performance.
Appendix 5: Underachievement in Mathematics - Reference Material

Better Numeracy in Primary Schools (ETI 2010)
Access at: http://www.etini.gov.uk

Count, Read: Succeed (Dept of Education 2011)
Access at: http://www.deni.gov.uk

Keeping Up – Pupils Who Fall Behind in Key Stage 2 (dcfs 2007)
Access at: http://www.teachernet.gov.uk/docbank/index.cfm?id=11470

Making Good Progress in KS 2 Mathematics (dcfs 2007)

Moving on in Mathematics – Narrowing the Gaps (dcsf 2009)
Access at: http://nationalstrategies.standards.dcsf.gov.uk/node/264253

Narrowing the Gaps: From Data Analysis to Impact – The Golden Thread (dcsf 2009)
Access at: http://nationalstrategies.standards.dcsf.gov.uk/node/246991

Overview of Pupil Performance Data (Inter-board Literacy and Numeracy Co-ordinators' Training Materials 2010)
Access via individual ELB’s CASS websites

Securing Level 4 in Mathematics (dcsf 2009)
Access at: http://nationalstrategies.standards.dcsf.gov.uk/node/165326

Tackling School Underachievement (Primary Headship, July 2008)

Underachievers: techniques and tactics (Curriculum Management Update, Dec 2007)