Intervention in Mathematics in Primary Schools

The Foundation for Science and Technology
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deptartment for children, schools and families

3. The review should specifically make recommendations to inform the development of an early intervention programme for children (age 5 to 7) who are failing to master the basics of numeracy – “Every Child Counts” - as recently announced by the Prime Minister.
Wave 1: Quality First Teaching

Wave 2: Small group additional support

Wave 3: Individual or very small group support with a trained Teaching Assistant

Intervention: NNS ‘Waves’

The first thing to remember is that the best way to reduce under attainment at KS1&2 is to make ‘Wave 1’ Quality First Teaching even better!

............but before we come to Intervention
The Mathematics Specialist and CPD

- Renew the emphasis on CPD required by practitioners and local authorities
- Focused on both in-school activities and third party ‘market’ provision (including HEIs)
- Responsibility delegated to school level

Phase 1: Strengthen the mathematics expertise at Local Authority level, via a ‘refresher’ CPD course for all mathematics consultants.

Phase 2: Within five years, each primary school should have at least one Mathematics Specialist with deep mathematical subject and pedagogical knowledge, making appropriate arrangements for small and rural schools.

Intervention: Every Child Counts

- The Every Child Count programme is intended to reach the lowest-attaining 5% - 10% of pupils

- As the statistic below demonstrate, the numbers failing to achieve level 3 at key stage 2 have remained consistent

% failing to achieve level 3 at key stage 2

<table>
<thead>
<tr>
<th>Year</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7</td>
<td>6</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>6</td>
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So what are the causes?

- Dyscalculia (cf. dyslexia)
- Attitudes to learning
- Social deprivation
- Class sizes
- The genuine challenge in learning mathematics

........... or all of the above?

WHAT CAN BE DONE ABOUT IT?

Intervention

And it’s global – ‘Maths Recovery’ has been used in the USA, New Zealand, Canada, Ireland and the UK
So Intervention works...........
...........but questions remain

- ‘Age and Stage’ of the child
- Intensity and length of intervention
- Teacher/child ratio
- Costs
- Methodology – what works and what doesn’t
- Classroom absence during intervention

Age & Stage?

- The consensus is ‘intervene as soon as the problem is diagnosed’ – usually KS1 age 5-6
- Numeracy intervention often follows literacy/reading intervention

BUT
What do you think?

......and the optimum Teacher/Child ratio?
- One to one is favoured (e.g. Numeracy Recovery, Maths Recovery)
- But the review has observed 1:3 and 1:4

QUESTION:

IS 1:1 THREE TIMES AS EFFECTIVE PER INDIVIDUAL CHILD AS 1:3?
BECAUSE.........
Intervention: Annual cost estimates £M

But Question: Does 1:1 for 3 days per week produce equivalent benefits to 1:1 for 5 days @ 60% of the costs?

Intensity and Length of Intervention

- ‘Intensive’ intervention implies individual or very small groups (i.e. 1 to 3 children)
- Daily for 20 minutes or so is the norm
- One whole term can show dramatic progress e.g. Hackney

<table>
<thead>
<tr>
<th>Academic year</th>
<th>NC Sub-levels/year gain</th>
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<tbody>
<tr>
<td>2004/5</td>
<td>2.3</td>
</tr>
<tr>
<td>2005/6</td>
<td>2.94</td>
</tr>
<tr>
<td>2006/7</td>
<td>3.15</td>
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</table>
So what works and what doesn’t?

- The good news is that *all* the interventions seem to work – the question is ‘how effectively’?
- The final report will lean heavily on ‘Numeracy Recovery’ and on ‘Mathematics Recovery’ for intensive intervention and perhaps ‘Catch-up Numeracy’ for the next cohort of struggling children.
- Resources *matter*, especially multi-sensory and IT-based; familiar surroundings are also vital.
- Parents matter *even more*; their support is vital.
- The child’s commitment matters *most of all*.
- So repeated withdrawal from class is an issue.

And finally……………..

The effectiveness of all the above ultimately rests on the ability, experience and specialist training of the intervention teacher.
Intervention - recommendations

Recommendation 6: Intervention in Every Child Counts should be led by a qualified teacher, normally with a single child, but in the research and development phase, there should also be investigation of the potential benefits of working with small groups of up to three children.

Recommendation 7: Before any intervention programme is implemented, it is vital that the child is fully committed and that the parents or carers are involved and understand the nature of the programme. These issues and the question around the integration of intervention teaching and classroom teaching for pupils should be considered carefully in the research and development phases of Every Child Counts.