

Developing a Whole School Approach to Fluency at Spring Lane Primary School

School background:

Spring Lane Primary School is a large urban Primary School in the centre of Northampton. Most pupils start school well below the expected level of development and the majority of pupils are EAL.

The last time that OFSTED visited they stated that children were not fluent in basic times tables and number bonds

With this in mind, Spring Lane wanted to increase fluency which will increase the depth of understanding in the classroom.

Aim of the project:

As featured on the school action plan for maths, one of Spring Lane's priorities was to increase fluency throughout the school. The aim of the project was to implement a school wide way of testing fluency to show progression as well as have a bank of ideas to use effectively inside and outside the classroom.

With this in place, the school as a whole will increase fluency which will transfer from term to term, as well as year group to year group.

The Project:

It was decided that a whole school approach to fluency was necessary as there were distinct differences in the amount of time and type of activities children were taking part in across the school.

By implementing a whole school approach, the overview is clear linking with the national curriculum standards.

Step 1- Developing the Whole School Mental Maths Overview

Initially a whole school mental maths overview was developed. The fluency facts were broken down, term by term and year by year. The aim of this was to allow children to gain greater depth of understanding of an area rather than moving onto the next. Spring Lane believes that with depth and fluency of the mental maths development will increase the work depth in the classroom. This overview was shared with all staff along with the expectation of the profile of mathematical fluency activities to be raised both within mathematics lessons and at other opportunities in the school day.

Step 2- Developing Assessments

Mental maths test have been developed for every year group to test the children's ability at the start and end of the area according to their age. (samples attached) If children are fluent in this area, then they will receive open ending investigations to increase their cognitive thinking behind a question.

Step 3- Trialling the Assessments

Initially, the tests were trialled in year 5 to ensure that they were easily accessible to all children of all abilities. Data collection (see example) revealed exactly what degree of fluency children had and which times tables to target.

Step 4- Developing Working Walls

Another key feature of the project was the expectation that all classrooms would have a working wall for mathematics and incorporated into this would be the term's fluency facts from the mental maths

overview. All working walls were based on the SLAM principle (Symbols, Language, Action and Models) and although all classrooms now have them, monitoring revealed that the effectiveness of them was varied across the school and this is an area we will continue to develop.

Step 5- Engaging Parents

The term's fluency facts from the mental maths overview were shared with parents at a parents' evening along with suggestions of activities which children could complete at home to improve fluency. Due to many of the parents of children at Spring Lane not speaking English but being keen to support their children, we felt that times tables and number bonds fluency was an area where they would be confident to help at home. Our next steps with this is to develop the mathematics area of the school website with more examples and fluency practises that the children could do at home.

Step 6- Monitoring- Pupil Interviews

In December (end of term 2) pupil interviews were conducted with children in Years 1-6 and part of this involved testing them on their term 1 and 2 fluency facts. Approximately 80% of the random sample were fluent in the term 1 fluency facts and 50% in the term 2 facts. Children also were able to refer to the working walls in their classroom and point to the fluency facts and what they need to learn next.

Challenges:

Time in the curriculum

Teachers expressed that not having enough time in the school day was a limitation. With so many other requirements of the curriculum and with writing being such a priority at school it was felt that finding time spent actually *teaching* the fluency facts was difficult. Teachers had allocated time in the timetable to test times tables however not to actually 'teach' them. This was overcome by encouraging teachers to consider how they could utilise other times in the timetable and incorporate fluency. Some teachers are dedicating time in guided reading 'carousel' sessions to fluency and are using Mathletics to do this. Other times such as lining up time, homework, end of the day and registration are being used to practise, sing, chant and rehearse fluency facts.

Teaching Groups

At Spring Lane Maths is taught in sets rather than classes. This can sometimes be limiting and Maths tends to be very stand alone. It has been suggested that teacher's state on planning which children are not fluent in the current term's fluency facts on their planning so that all teachers who teach them can be aware of children to be targeted. Teachers are also being encouraged to think of ways to get maths learning into other curriculum areas as much as possible.

Next Steps:

Staff CPD

An INSET or series of staff meetings will now need to be held to share good practise and the principles from the Fluency Project. Teachers need to build up a 'bank' of activities and resources that can improve fluency rather than the traditional chanting and practising methods. Ideas have been collated from the Fluency Project as a starting point but teachers need to be encouraged to think more creatively when approaching this area.

Developing the School Website

Obviously the implementation of the Mental Maths Overview would be more effective if parents/carers were helping children at home. The development of the maths area of the website with

links to Mathletics and other useful websites as well as ideas for parents to help would definitely be beneficial.

It is felt that the impact of the implementation of the mental maths overview is beginning to be evident and mathematical fluency is definitely being given a higher profile within the curriculum. There is without a doubt a long way to go in terms of getting the children up to speed with their fluency facts but hopefully this approach will give structure and direction for all at Spring Lane.

Fluency Assessment Trial Year 5

Fluency Facts

November 2015

Year 5- Set 3- 4xtable

	Level 1 (out of 26)		Level 2 (out of 36)		Level 3 (out of 36)		Fact families	
Sumayo	26	100%	36	100%	34	94%		
Nuswaiba	26	100%	33	92%	11	30%		
Ceri	25	96%	0	0%	0	0%		0x4 Understanding of test format??
Foteini	26	100%	36	100%	20	55%		
Meiha	26	100%	36	100%	10			Time- start on 3 next time
Kiki	26	100%	6	17%	0	0%		
Leigha	-	100%	36	100%	0	0%		Time- start on 3 next time
Jorinda	26	100%	36	100%	14	39%		
Alexandru	26	100%	36	100%	36	100%		
Treshah	26	100%	36	100%	36	100%		
Reem	26	100%	36	100%	36	100%		
Osvaldas	24	92%	35	97%	0	0%		
Gabrielle	26	100%	36	100%	32	89%		
Alexandra	26	100%	36	100%	36	100%		
Sean	26	100%	0	0%	0	0%		
	All children able to calculate/recall 4 x table facts in order		12 children fluent on x facts 3 children not yet fluent on x tables		5 children fluent including division facts 10 children not yet fluent including division facts			

Level 1 Tables Challenge

7x table

$0 \times 7 =$	$0 \times 7 =$
$1 \times 7 =$	$1 \times 7 =$
$2 \times 7 =$	$2 \times 7 =$
$3 \times 7 =$	$3 \times 7 =$
$4 \times 7 =$	$4 \times 7 =$
$5 \times 7 =$	$5 \times 7 =$
$6 \times 7 =$	$6 \times 7 =$
$7 \times 7 =$	$7 \times 7 =$
$8 \times 7 =$	$8 \times 7 =$
$9 \times 7 =$	$9 \times 7 =$
$10 \times 7 =$	$10 \times 7 =$
$11 \times 7 =$	$11 \times 7 =$
$12 \times 7 =$	$12 \times 7 =$

Fluency Assessment Example (Times tables)

LEVEL 2 TABLES CHALLENGE

This tests the 7 times table

12	1	11	2	9	8	5	10	4	6	9	9
10	3	7	5	9	4	7	2	4	11	7	6
2	7	9	7	6	5	3	5	2	6	10	12

Time taken to complete:

LEVEL 3 TABLES CHALLENGE

This tests the 7 times table and division facts

12		11		9	8		10		6		9
	7		2			8		4		4	
			1			4		2		9	
	3					7		4			
1		1	2	2	7		3		7	5	4
4		4	8	1	7		5		7	6	2
2			7		5		5				
	2	3		7		6		4	5	2	3
	8	5				3		2	6	8	5

Time taken to complete:

CHALLENGE 4-

Can you write out the fact families for the 7 x table?

Fluency Assessment Example- Number Bonds

CHALLENGE 1

CHALLENGE 1 NUMBER BONDS TO 20 CHALLENGE- FILL THE BOX WITH THE NUMBER PAIR TO MAKE 20

2	1	10	12	19	8	15	20	11	6	19	9
0	13	7	15	9	4	17	2	14	10	3	16

Time taken to complete:

CHALLENGE 2 NUMBER BONDS TO 20

$20 - 2 =$	$4 +$	<input type="text"/>	20
$20 - 19 =$	$20 -$	<input type="text"/>	9
$20 - 15 =$	$20 -$	<input type="text"/>	14
$20 - 7 =$	$8 +$	<input type="text"/>	20
$20 - 8 =$	<input type="text"/>	$- 7 =$	20
$20 - 0 =$	<input type="text"/>	$- 15 =$	20
$20 - 14 =$	$3 +$	<input type="text"/>	20
$20 - 11 =$	$20 -$	<input type="text"/>	12
$20 - 13 =$	$20 -$	<input type="text"/>	16
$20 - 16 =$	$10 +$	<input type="text"/>	20

Time taken to complete:

CHALLENGE 3- CAN YOU WRITE SOME FACT FAMILIES FOR YOUR NUMBER BONDS TO 20?*Example*

$$1 + 19 = 20$$

$$19 + 1 = 20$$

$$20 - 19 = 1$$

$$20 - 1 = 19$$