

# Developing Mathematical Fluency in Early Years Foundation Stage Case Study

## Study 1 – The Development of the Programme

*“I don’t think that 5 years ago my children would have been able to talk to you about what Maths was. Now they love Maths and the Maths Meeting – it’s really interactive and practical.”*

### Interviewee – quoted in italics

Diane Neilson, Assistant Headteacher and Specialist Leader in Education (SLE)

### Background

Diane Neilson is Assistant Headteacher and Early Years Lead at St Mary and St Thomas CE Primary School, a Teaching School in St Helens. In 2016 she was asked by Lisa Bradshaw, Director of the Teaching School and Maths Hub Lead, to trial the published Maths Mastery document for Early Years Foundation Stage (EYFS). At that time the rest of the school had adopted a Mastery approach and they wanted early years to be included.

Diane liked parts of the curriculum but felt that some good practice would have been lost had it been adopted as it was. She also felt that it did not take into account the structure of an early year’s classroom, the way activities were completed and the immaturity of the children. It was decided, therefore, to adapt mastery principles to suit her pupils. Diane worked with Gill Hood, St Ann’s Assistant HT and SLE and Andy Ash Maths Work Group Lead. Together they developed an approach which they trialled in their own classrooms, meeting termly to discuss what had worked, what needed to change and what they intended to do the following term. Thus the programme evolved as they went along.

The team decided that a holistic programme was needed which would bring together all the elements of maths, not just number but shape, space and measure as well and they wanted it to be taught as numbers in sequence. Their aim was not to produce a prescriptive programme, either in the content or the way it was taught. What was important was the theory behind it, which Andy Ash researched. They started at the beginning of the year with the number 1, teaching everything about it through a concrete approach, using songs, stories and activities. They then moved on to the number 2, then 3 and so on, usually on a weekly basis, roughly covering 1 to 10 in term 1 and as far as 20 by the end of term 2,

number bonds being covered for each individual number. The third term was all about application and problem solving with those numbers. Larger numbers were considered but not in so much depth.

Teachers had a 'Maths Meeting' for children every day, where names and properties of 2D and 3D shapes were covered as well as coins, patterns, days of the week, date and time. Children played games that reinforced prior learning. Every morning they would count how many children were in class, how many were missing, talk about the sequence of days, dates, months, a pictogram of the weather and the number of the week.

As teachers introduced topics and themes in the second and third terms, number work was designed to reflect the same theme. So, for example, if the theme was Africa then children might count goats or talk about the price of milk and fruit.

From day one children were taught to use proper mathematical language which didn't have to change as they moved through the school. Teachers followed the usual mastery pattern of exploring with practical tasks, then having pictures to talk about, then covering more abstract concepts, all of the time encouraging oral reasoning and estimation. Consistency was seen as very important in order to prepare the children to move into Y1.

Throughout the first year the programme was adapted and refined. At the end of that time teachers were impressed with the way the children talked about maths, enjoyed what they were doing and were willing to take risks. Feedback from the Y1 teacher at the beginning of the second year was that it was notable that the children knew the shape, space and measure elements they had learned and didn't have to be reminded.

## Expanding the Programme

The plan was always to evaluate and develop the programme before rolling it out to other schools. Initially fourteen local schools became involved through the Maths Hub. Headteachers and Maths Leaders met prior to the start of the programme. Having been informed about the theory, teachers' experiences and outcomes, they were invited to apply for a limited number of places. The programme is now in its fourth year and has been adopted by over 80 schools.

The initial teacher training day is for Reception class teachers, Teaching Assistants being trained separately with more of an emphasis on practical work. Everyone is encouraged to see how things that are not at first sight 'mathematical' can be manipulated so that children are learning mathematical principles. Teaching Assistants and teachers become increasingly aware that stories, books and themes can be used to drive mathematical learning, ensuring that maths is seen to be everywhere. The programme is very flexible and draws on what the children are interested in and where they are in terms of capability.

Following the initial training day schools are split into groups with approximately one trainer to every six schools. NW Maths Hub 3 now has Seven EYFS trainers. Then teachers, as part of the Teacher Research Group (TRG), observe one of the trainers in their classroom leading whole class input, with a 5 minute

Maths Meeting followed by an hour in the classroom seeing how the work is followed up, what resources are used, what Teaching Assistants do and how learning affects future planning. Finally there is a debrief session. About a month later the trainer visits them in their schools when they have had time to put their learning into practice. The focus of this visit is up to them. The trainer can team teach, take a small group and model something or observe the teacher and feedback.

## Outcomes

Y1 teachers at St Mary and St Thomas CE Primary School confirm that children's mathematical knowledge and understanding is far better since starting the programme and this has been sustained over the past three years.

EYFS data shows that overall, children's mathematical reasoning and understanding is deeper than with the previous curriculum, and there is a positive trend, with more children exceeding Early Learning Goals.

Teachers who have used the programme report noticeable improvements in children's ability to talk about maths, their fluency, reasoning, confidence and enjoyment of the subject. Many have undertaken work with parents to explain how the programme works and to encourage them to have more positive attitudes to maths, discouraging them from talking about maths being a difficult subject which they don't like.

Functional Maths training is now available to parents at St Mary and St Thomas School as a 6 week course. The school also delivers 'open' lessons so that parents can sit in on a maths lesson and work with their child once the teacher led section has finished.

*"Parents can see the level that the children are working at – it's an eye opener. They explain to their parents what they are doing, how it works, why it works. It gives the children confidence and encourages parents to help them with their homework."*

The Maths Hub is now building a team of SLEs who are able to facilitate the Teacher Research Groups so that more schools can access the programme.

*"We're always oversubscribed and having to turn people away. Most interest comes via recommendations from people who have been trained recently."*

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Lisa Bradshaw – NW3 Maths Hub Lead  
[lisa.bradshaw@three-saints.org.uk](mailto:lisa.bradshaw@three-saints.org.uk) | 07446 463250

Sarah Makin – NW3 Maths Hub Administrator  
[sarah.makin@three-saints.org.uk](mailto:sarah.makin@three-saints.org.uk) | 07446 446418

