

## Case study:

## Maths Champions



National Day Nurseries Association

**Name of setting:** Portsmouth Grammar school Nursery

**Date submitted:** March 2017

**Information supplied by:** Sophie Hillier and Michelle Stone

**Title:** Early Years Assistants

### *Key points of your Maths Champions improvements*

- Developing the opportunities for mathematical development in all areas of provision including outside.
- Inside and outside Ateliers
- A better and broader understanding of the EYFS, particularly regarding shape, space and measure
- Deeper understanding of how children acquire mathematical concepts in the Early Years
- Introduction of Numicon to the children enabling a secure foundation across the maths strands of the EYFS

### Background detail

*A little bit about your setting and why you joined the programme – what did you want to achieve from Maths Champions*

Portsmouth Grammar School Nursery is attached to an independent school which has pupils from 2.5 to 18 years. The nursery has 17 full and part time members of staff, 84 children on roll divided into 10 key groups and an average daily attendance of 50 children. The nursery is set out in a large open plan horseshoe shape with a smaller room for the Under 3's, for the majority of the time the under 3's have access across the provision. There is a small, enclosed outside area which is open at all times. Groups of children visit the beach every week for Beach School learning. Recent Independent Schools inspection graded the nursery to be **excellent** in all areas. Children are very well supported by parents and achieve very well.

The nursery has had a change of leadership in 2015, with that came a change of approach. Self-evaluation highlighted the need to improve the way in which maths was delivered. Existing maths provision was restricted to a designated maths area within the nursery environment with a focus on counting. Small group plans were drawn up for all the children across the nursery, *a one size fits all* approach. Leadership and staff highlighted actions for improvement as follows.

Actions for improvement:

- More opportunities to support the development of maths across the provision.
- Increase staffs understanding of how children learn maths.
- Develop confidence in the delivery of maths.
- Planning for adult led activities to be relevant for all children.

The Maths Champion Project seemed to be the best way to help staff address and achieve the action points identified. Two Maths Champions were appointed and would be responsible with the support from the Head of Nursery in implementing the actions.

## **Section 2**

### ***Highlights and lowlights of the programme so far***

*What have you done? What elements have worked really well? What, if any, barriers did you come up against and how did you resolve these? What are the key learning points?*

Initially the Maths Champion audit tools were used enabling us to identify more specific areas for improvement and to recognise and celebrate what was working well.

We identified that our outside area in particular needed attention to provide more practical and open-ended opportunities, this became our initial focus as it was an action that could be easily met. Many new resources were provided including a mud kitchen with plenty of containers and tools, a hob, and various size spoons to support the language of quantity and number. A water wall was erected using tubes, spouts, buckets on pulleys, channels and measuring vessels, naturally developing the language of capacity, a basketball hoop for counting throws and an outside Atelier with natural loose parts, many of which we found on hunts in the local area, for sorting, counting, exploring shape and making comparisons. Large weighing scales were made and positioned next to the Atelier so children could explore weight and a large interactive number line and counting station was developed to support number recognition, sorting and counting. All resources were made to be very appealing using reclaimed materials and were developed with the children's schemas in mind. Inside the nursery an Atelier was developed containing loose parts for the children to explore, count, sort, weigh and explore patterns. Number lines displaying sets of images of the children from 1-10 alongside their numeral, an interactive number line for children to count and match objects from 1-10 was displayed, wooden blocks were added to the small world area to support the exploration of shape, scales were added to the playdough area. Improvements made in the environment were not perceived to be negative by any staff with staff fully embracing the changes.

Undertaking the staff confidence audits highlighted there was a general lack of confidence in the subject of maths, with most practitioners having negative memories of maths lessons at school. The National Numeracy assessments were a cause for concern for some staff as they were nervous about exposing what they perceived to be weaknesses in their own knowledge. To support some staff members the maths champion's guided some individuals through the assessments encouraging them to really read the questions and to carefully think about the maths needed to solve the problem. This initial mentoring paid off as all staff undertook their second assessments

with confidence .Most staff were pleasantly surprised by their results with many taking the opportunity to extend their subject knowledge using the resources on the National Numeracy website.

To continue supporting staff's professional development the maths champion initiative was always an agenda item on staff meeting, two staff meetings were dedicated solely to maths champion targets .Developing staff's understanding of how children learn maths and the importance of effective interactions to support mathematical learning is still a challenge and will continue to be a focus as we complete the Maths Champion initiative. Parents were kept fully informed to the initiative through newsletters and regular updates via email, a whole week was dedicated to parental partnership two weeks before Christmas. Parents were invited in to learn how children acquire mathematical concepts, they were also given the opportunity to make playdough and explore how playdough could be used to support shape, space and measure and number. Parents were invited in to nursery to play alongside their child to see how activities are planned and delivered within the nursery; planned play activities included building a sleigh, sorting baubles and presents, a Christmas assault course and sparkly pattern making.

The maths champions were very keen to introduce Numicon across the nursery. The nursery was able to purchase Numicon sets; Numicon was introduced into the nursery but it quickly become very clear that staff were focused too heavily on counting the holes rather than helping them *understand* about number. As a result the Maths Champions went on the national training event Numicon Firm Foundations programme, Maths Champions now deliver planned Numicon activities to the children, our long term aim is that the good practice modelled by them will eventually be mirrored by all staff. The Firm Foundations programme has become an important part of the maths planning and has been rolled out for the children of pre-school age with a future action to deliver the programme across the 2-3 year old room.

A key barrier to moving practice forward has been time; time given was limited in terms of length of time thus restricting how much could be done in a certain period. Key learning points from the whole year, are staff, just like children, will learn at different rates and will embrace change in different ways.

### ***Impact of the programme***

*What has the impact been on your environment, your staff team/individual practitioners? What has the impact of the project been on children's development across all age groups or for your parents/families?*

The nursery has become a richer more interesting learning environment where children are able to access more resources independently. The Ateliers have provided a stimulating collection of loose parts for many discoveries. Where previously there would have been one set of counters, some pots and number cards there is now a great variety of resources. We have observed children sorting, weighing, arranging and making patterns, making connections, counting, playing and having fun. The staff have had mixed reactions to the Atelier whilst everyone can see how much the children enjoy accessing it and that they are always doing something different with it, there is always the potential for a big mess, especially with the younger children. Overall though the response has been very positive and of course tidying up is a great sorting activity.

We have focused our initial efforts on improving the outside area and here we have heard a notable increase in mathematical language. There are so many more things to talk about just recently a

child was overheard playing on the interactive number line “I’ve got five this side and five that side. When I put two in the middle, I’ve got four this side and four the other side.”

Recent observations indicate both an increase in annotations about shape, space and measure and a confidence when modelling the use of mathematical language for the children. Staff have shown a positive attitude to a freer, more child-led, open approach and we certainly have seen the positive results of this with the children.

We have been able to reinforce the importance of fundamental mathematical skills, and of ensuring that they are well established. The children have responded well to the Numicon, they love how it looks and feels and they are starting to recognise the relationships between the different sized shapes.

Spring term data in relation to last year’s data indicate that we have a higher proportion of children working within the 40-60 month bracket, particularly in number.

### ***Did you achieve what you wanted from the programme? If so, how?***

On the whole, we believe we have significantly changed and improved the maths provision in our setting. We have improved our partnership with staff, parents and children, making maths more enjoyable for everyone. Personally we have gained a better understanding of mathematical development and how to support each step of learning for our children. Our environment is mathematically richer with resources being better deployed and opportunities for learning maths are everywhere.

By using the audit tools provided by the NDNA, we have been able to identify our strengths and needs. Once we had this information and an action plan, we set ourselves targets based upon the red areas and did our best to meet them. Inspiration for the changes came from various sources including, but not limited to, the Maths Champion programme. Some of the changes such as increasing our natural and measuring resources or reflecting the children’s own interests were fairly simple to address with a quick shopping trip. Other areas like staff confidence, supporting parents, and embedding maths knowledge into other areas of learning have taken a bit more time and planning, and will continue to do so.

### ***How has the programme helped you further develop your own practice?***

Our knowledge and understanding of the development of maths in Early Years has increased significantly, and we are keen to gain more knowledge and understanding. We have become passionate ambassadors for maths, quite literally Maths Champions! We are always looking for new ideas or resources and have developed something of a maths bias. In our role as Maths Champions we are very conscious of having a responsibility to model best practice and promote the potential maths opportunities in every activity.

## Next steps

*How are you going to develop your practice further and why, what will the impact be? Who will be involved? How will your practice support good outcomes for children?*

Future actions.

Future actions	impact	outcomes
Staff to continue to gain better understanding of how children learn maths	Interactions to scaffold maths learning will improve	Children will achieve their full potential across the maths strands
Continue to use the audit tools regularly to monitor the provision.	Opportunities for mathematical development will be available in all areas of the nursery	Quality of provision will remain excellent
Develop the maths provision for the new setting for children under 3.	Parity of mathematical provision across the nursery	Children will achieve their full potential across the maths strands Transition from lower age group to pre-school room will be seamless
Maths Champions plan, deliver and monitor children's progress	All activities will be relevant and based on next steps of learning for all children across the nursery.	Children will achieve their full potential across the maths strands

### National Day Nurseries Association

National Early Years Enterprise Centre, Longbow Close, Huddersfield, HD2 1GQ.

Tel: +44 (0)1484 40 70 70, Fax: +44(0)1484 40 70 60, Email: [info@ndna.org.uk](mailto:info@ndna.org.uk), Website: [www.ndna.org.uk](http://www.ndna.org.uk), Twitter: @NDNAtalk,

**Published: March 2017**