

Maths Champions Case Study

Champion: Mandy Moore

Setting: Little Angels Day Nursery (Highbury)

INTENT
Introduction <i>A little bit about your setting, why you joined the programme and what you wanted to achieve from it.</i>
In April 2024, our Early Years Teacher went on maternity leave, coinciding with the exciting development of a new Pre-School Room in our garden area. I was given the opportunity to lead this Pre-School Room, thanks to my Early Years Teacher Status and my experience working with 3-4-year-olds for the past four years, alongside 14 years previously with toddlers. In this role, my focus was to plan engaging activities that cover the seven areas of learning and guiding our team in enhancing the quality of resources and experiences we provide, ensuring that we support the children's development and prepare them well for their transition to Reception class. When we opened the Pre-School Room in Spring 2024, we quickly noticed that maths was an area needing more attention; our OFSTED inspection in January 2024 also noted maths to be an area of focus. To address this, we enrolled in the Maths Champion programme, which we viewed as a fantastic opportunity to explore new teaching methods and enhance our understanding of maths education. I was asked to take on the role of Maths Champion, with our manager as the deputy. Together, we aim to share effective maths teaching methods across all rooms in our setting. We're excited about this journey and the positive impact it was to have on everyone involved. Our goal was not only to support the children but also to boost staff confidence in teaching maths and communicating progress to parents. It was with the new intake in September 2024, we began actively engaging with the children and implementing fresh teaching strategies.
How did you decide what to do? <i>What did the audits highlight, what changes did you consider and how did you identify the change/s to be made? Did the changes you considered come from the online training or resources etc?</i> Since beginning the Maths Champion programme, I've been exploring ways to improve our Pre-School Room. I came across an idea on Instagram about labelling resources, which inspired me, especially regarding glue sticks. Due to the lids consistently going astray, I decided to label the lids and tubes with numbers 1-10. I've observed that this small change has made a big difference; the children are now much more careful with them. It's heartwarming to hear them asking each other, "can you find number...?" and engaging in conversations about the numerals they see. Having worked with 3-4-year-olds, I've developed some memorable phrases for the numerals 1-10, like "8 looks like a snowman." This creative approach has helped the children remember what the numerals look like. To further support their learning, I made a poster for the classroom that features these phrases, providing a fun visual aid that the children can easily recall and engage with. <u>What did the audits highlight and changes made</u> Since initiating the learning environment audit, I've observed the resources we currently have and those we need to obtain. Firstly, I've identified a range of puzzles to support all abilities: simpler twist-fit puzzles for our younger 3-year-olds, 12-piece puzzles for those more adept, and larger floor puzzles for collaborative group activities. This will help foster a love for maths in a fun and engaging way both inside and outside! The audit brought to our attention the need for more problem-solving games and activities, so we've been exploring some exciting options to enhance our curriculum. We're focusing on resources that involve counting, colour matching, and creating simple patterns. We already had an abacus in the room, which we've started

incorporating into our maths routines for simple addition. Some children have grasped this concept quickly, while others are still working on it. We've also reintroduced bowling with small skittles, both indoors and outdoors. We're encouraging the use of mathematical language during these games, asking questions like, "If there were 10 skittles and 4 were knocked down, how many are left standing?" Additionally, we've been using a box of colourful animals for various maths activities, such as counting, sorting into groups, and creating patterns. Our dotted dice have also found a regular spot in our daily activities, making maths fun and engaging for everyone.

Since we did the staff confidence audit, it has become clear that staff feel much more self-assured when engaging in maths activities with the children, which is fantastic to see! However, we've also identified some gaps, particularly in their ability to discuss maths with parents, plan effective lessons, and support children's problem-solving skills. Additionally, staff need guidance on how to have meaningful conversations with children about various maths topics, such as comparison, measures, capacity, length, and weight, as well as how to use comparative and time-related language effectively. Interestingly, staff believed they were accurately assessing children's mathematical skills but were surprised to learn that counting 1-5 can have different implications—like counting randomly, counting specific objects in front of them, or counting a set from a larger collection, each reflecting different levels of understanding. Based on the confidence audit, I've identified areas for improvement and have planned targeted support to address these needs.

Did the changes you considered come from the online training or resources

The three training courses from NDNA as part of the Maths Champions programme were amazing. To follow on from this I have also been joining online 'Let's Talk Maths' webinars. Together these have given more ideas on resources, to make or buy and have highlighted gaps we have such as patterns or problem solving.

IMPLEMENTATION

What did you change or implement?

Outline a positive change, or changes, that have taken place as a result of being part of the Maths Champions programme. How did you plan for it and what did you do? How did you plan to assess the benefit of the change on staff practice and children's experiences?

The largest change that we implemented into the setting, was bringing maths language into normal routines, especially the mealtime process. For example, first children were asked how many of something they wanted when being served, 1 scoop or 2, or a big or small amount. From here as children were serving themselves, they were asked how many scoops they were going to take, which size they were going to take or where they were going to place this (next to, or on top of). We have noted a large increase in children then using this language within mealtimes, even without being prompted. Some will move food such as pasta to one side to place sauce "next to" their pasta. This has since developed into more of a maths game where children are handing out plates, cups and cutlery, being asked how many do we need for everyone, how many more if there wasn't enough or if there were two types, we need 10 overall and have 4 (dietary) red plates, how many blue ones do we need and visa versa. As a result of this, children are now more aware of quantity, knowing how much can be classed as a big portion or small portion and taking 1-2 scoops themselves independently to reflect this.

Following the environmental audit and the three Math Champions training sessions, we observed that while we had some basic math-related activities, such as puzzles, an abacus, skittles, and dominoes, there was significant potential to enhance the maths development of the children. Consequently, we decided to invest in additional resources, including a fishing game and sorting tools for shapes and colours. We also acquired more advanced puzzles like magnetic puzzle boards designed to challenge problem-solving skills, mosaic boards, threading beads, and coloured cubes to facilitate pattern exploration. To aid in understanding balance, we introduced frogs and scales, alongside counting and sorting activities. Furthermore, we incorporated wooden loose parts and natural materials, such as concentric coloured circles, which are now being used to explore size in greater depth. A recent addition is our shape sorter, where children must match shapes and colours and post these into the slots, or follow the pattern cards to find the missing pattern.

In the last week we have also rearranged the room to make a maths wall – where children can help themselves to a variety of different math related resources such as picture puzzles, numeral puzzles, and dominoes to name but a few. These can be changed regularly based on skills we are developing and the children's interests. It was a delight to see one child pick a large table puzzle and complete this independently, calling the adult in a proud voice to show them!

We've begun creating games that cover various math concepts, making learning more engaging for the children. Additionally, we've added to our library enjoyable math books for children and some from the '50 Fantastic Ideas' and 'Little Books of...' series for adults seeking inspiration.

After introducing new resources, we've noticed a wonderful development in the children's skills, focus, and concentration. They frequently ask to use these resources and often understand their purpose. It's delightful to see their enthusiasm for the topic and their eagerness to challenge themselves. This engagement truly highlights their growth and curiosity, which is so encouraging in our early years setting.

IMPACT

The success and benefit of what you did:

For children

What has been the impact of the changes on children's learning and development? How has being involved in the programme made a difference for children in your nursery?

We've noticed that when our staff incorporate math language into their interactions, such as using numerals, counting, and discussing quantities, the children naturally follow suit. During mealtimes, they engage in conversations about these concepts without needing prompts. Additionally, we've observed them using directional and positional language, especially during construction play, with comments like, "Can I have a triangle to put next to this one?" It's wonderful to see their development!

We have identified one child who demonstrates exceptional talent in mathematics. She can count beyond 70, identify at least 35 objects from a large box, and recognise numerals up to 100. She actively requests sums to solve and was notably the only one who quickly understood mazes. This child has been asking for more advanced maths so currently, we are focusing on addition and subtraction, as well as exploring odd and even numbers and patterns. I have used online resources to start looking at colour by numbers, but with simple sums. This has prompted me to consider how to differentiate the maths curriculum to better suit her needs, and I am reflecting on how to plan her individual next steps effectively.

For families

What has been the impact of the changes on families? How has being involved in the programme made a difference for families whose children attend your nursery?

We've been having wonderful chats with parents about the maths activities happening at nursery. Through our FAMLY app, parents can see details and updates about their children's progress in both observations and daily posts. This open communication has led to more discussions at pick-up time about what the children have been exploring, and it's delightful to see how proud the children are to share their achievements with their families. Additionally, many families have mentioned that their children are showing a greater interest in maths at home. Parents have been eager to know how to weave these experiences into their daily lives. Some parents have started doing simple sums with their children, and it's great to see how much progress their interest in this area of the EYFS has made.

For staff

How has being involved in the programme made a difference to your staff team/individual practitioners? What has been the impact on their practice?

The staff confidence audit presented a bit of a challenge as some team members rated themselves quite high, stating levels of 1 and 2, despite not always demonstrating that level of confidence in their practice. During our recap sessions, several acknowledged feeling less confident than they initially thought. However, introducing more maths activities in the pre-school room has really encouraged others to embrace these activities and step out of their comfort zones, focusing on a topic they might not typically have chosen. It's been lovely to see some staff, who initially felt confident in maths, planning and implementing related activities. That said, it has been a bit tough to encourage some of our more senior staff to shift their mindset and integrate maths into daily routines, particularly during mealtimes and outdoor play in the garden.

As I started to focus on different areas of maths, fast and slow, short and long in terms of distance, over and under I can see some staff responding to these and I hope that they will feel more confident eventually in taking the lead in an activity that moves away from counting, number and shape. The new Math wall in the Pre-School room will also benefit staff that are a little less confident.

For the Maths Champion and Deputy Maths Champion

How has the programme helped you as Maths Champion and Deputy Maths Champion to develop your own practice? What has been the impact on your practice?

One of the biggest challenges for undertaking the Maths Champion was time. Finding time to get off the floor from the children to do the paperwork, courses and plan new things was difficult. I realised that over time, I was the only one planning for maths and doing the core activities for example. After discussions between the Maths Champion and the deputy we realised delegation was key, knowing staff's strengths, weaknesses and what they feel comfortable challenging themselves with was key in the learning process. I have become much more confident in teaching the EYFS area of maths and supporting my team in doing the same, as well as talking to parents about how they can support their child at home. The three Maths Champion training sessions really boosted this alongside the webinars I have also been attending. The child that has a strong ability in maths, is challenging me to think more outside the box and find new and exciting ideas, games, and resources, which I love!

For the setting

What has been the impact on your environment?

Mealtimes have become more discussions about maths – how much we are eating, big and little, how many scoops. It has also built on children's confidence and independence when trying to serve themselves if the adult gives them time to do this and direction.

Because of this training the Pre-School Room is much more math oriented. For example, we were looking at the rain and started a conversation on if it was heavy or light rain or picking up children are they heavier or lighter than a peer, or taller or shorter. Maths seems to have wormed its way into all areas of the EYFS, counting as part of morning 'Bootcamp' where we also touch on direction (Physical Development), using size in creative art (Expressive, Arts and Design) or measures in cooking (Understanding the World). To see children's confidence and independence (Personal, Social and Emotional Development) grow with their peers, listen to group conversations (Communication and Language) in construction play or simply seeing them pay more attention in reading (Literacy) is amazing. We have even seen this filter through to the Quiet Room (same age as Pre-School) as some staff who go between the two filter it over.



Next steps

What further improvements might you make and how will you continue to monitor the quality of maths opportunities within the setting?

As we have seen such a boost in the Pre-School Room and can see it starting in Quiet Room, we would love for this to continue. We would like to add math resources, something that they don't have in the Pre-School Room, so children are exposed in both of their main teaching areas.

We know how challenging it has been to filter maths into the garden outside area, so we have allocated one staff member, the individual who has taken this programme on board the most, and given them the responsibility to plan how we can adapt the garden, its resources and activities to enhance maths learning outside as well as in.

We would also like to cascade what we have been learning through to the wider team, not just those that are working with this age group. We believe that there is so much potential in the setting and would love for other practitioners to be able to show more understanding of all areas within the maths topic, based on the age groups they are working with; the core activities for over 2's and under 2s will aid in this.