

Maths Champions Case Study

Champion: Abigail Nicholls nee Brewer

Setting: Bridgwater and Taunton College Childcare Centre

INTENT
Introduction <i>A little bit about your setting, why you joined the programme and what you wanted to achieve from it.</i> We are a 71 place setting rated outstanding by Ofsted in December 2022 with 102 children on role, located on the Bridgwater campus of Bridgwater and Taunton College. We accept children from the age of 6 Months through to they start Primary School. We open 50 weeks a year from 8am until 5.30pm. Our families, which include students, staff and wider community are from across Somerset area and consequently we feed into several schools across the county. We have 12 children in receipt of pupil premium, currently there is 8 children on are on support plans with, 3 of whom receive SEND funding and 1 who has EHCP in place. Additionally, we have 18 children for whom English is not their first language. We have a large outdoor space with a separate dedicated forest school space. Our team includes 2 Apprentices and staff qualified from Level 2 through to Level 6 and one holding Early Years Professional Status and another being a qualified teacher. This also includes a designated forest school lead. We work closely with the Early Years team within the college and at the University of Somerset, with several students completing placements with us as part of their studies. We are near completing an expansion which will see us open a new facility for under 2's to reflect demand in the local area for under 2 provision and the roll out of government funding in addition to expanding our 2 year old room. Initially I was approached by my manager to see if I would be interested in the programme, knowing my commitment to CPD and the drive to cascade and implement training I undertake. She also wanted champions across the nursery to support the success of the programme. Having read about the programme, I agreed to support, being based within the pre-school room and working with our school leavers who are on track or exceeding during adult led group times and passionate about our curriculum. I committed myself to the programme based upon the fact I wouldn't lead due to being EAL Lead already and upcoming Wedding. I felt it was opportunity to enhance my knowledge and confidence in providing engaging maths provision and opportunities for maths through in the moment planning to enable children within my care to meet their full potential. Together with our manager we want maths to be embedded within all areas of continuous provision to support in the moment planning in addition to promoting critical thinking and problem-solving skills, starting with our youngest children. We recognise our outdoor space as opportunity for further learning to take place and that some of our children spend a significant amount of their nursery day in the space. Therefore, we want to be able to draw upon natures treasures to develop sense curiosity and champion mathematical learning. 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> Initially we were quite keen to get stuck in but following the first webinar we felt overwhelmed by the prospect of what we had just embarked on. We had so many things we wanted to get on with that I now feel I got ahead of myself slightly at this point. I realise now there is a reason there is a recommended step by step process and I wish we'd stuck to this more. Our priority at this point was to get the registration process complete, get consents from families and set up folders. This resulted in us overlooking the parents' guide which we feel would have been a helpful tool to have shared with our families when we were seeking consent. We also acknowledge neither of us had recorded in our own notes that we were sign posted to this document. Upon receiving consents, we selected a sample of 6 children, 2 from each cohort that reflect the diversity of the setting. Initially we choose children who

were high ability, EAL, in receipt of Pupil Premium and amongst some of our youngest children. We wanted to complete a starting point early in the programme to show a true picture of the impact that the programme has had across the setting come the end. However, this sample changed due to children moving on from the setting, due to moving/ and or attend a pre-school nearer to school they are likely to attend.

It was important for us to get our colleagues on board early on and we were keen for them to complete their initial audit, even if was anonymous during a staff development day so we would be able to collate information from all within the setting, however time did not permit this and we therefore we did not receive responses from all. Although, those we did receive thankfully reflected the 3 areas of nursery (0-2's, 2-3's and 3-4's) it became apparent the different experiences of our team but also highlighted room for improvements. I wish now that we waited a little longer, and when completing this initial audit, we also encouraged the team to share their maths anxieties. This way we would have known that when working with the team in addition to the conclusions made from the audit how we can support them further. We were also conscious of fact that a percentage of staff were also about to attend a free webinar that promoted maths and we didn't want this to influence staffs confidence if it was fresh in their minds.

At this point the lead, was inspiring, embarking on the training units and a driving force for me to also work through them and keep up to speed with her so that we could discuss and compare notes. I found the Developing Mathematical Confidence in the Early Years so powerful. It significantly made me re-think my approach to number and it clarified terminology I have encountered within guiding curriculum documents. It also brought my attention to maths provision within our youngest children as I am aware there is limited curriculum guidance. The explanations and almost theoretical knowledge completely resonated with me, and it made maths in the early years simplified.

During this time, we were developing ideas of resources we could use within the setting, such as using dice patterns. Our big focus was on the outdoors as this is one of the reasons parents choose our setting and some of our boys particularly spend a lot of their time outside. It also coincided with the webinar Maths Outdoors. We were also aware of a training session happening here at the Nursery about Forest School due to take place in April 2024 that gave us further drive as they would be looking at our outdoor space. Therefore, to focus us, we explored the specific outdoor learning environment audit. The outdoors was also highlighted as an area to target within both staff confidence and environmental audits, so with the better weather improving and the Easter Break approaching it became the focus.

Each webinar prompted further actions and began shaping my practice with simple changes such as modelling quantity when discussing numbers on my digits. We were able to reflect upon the things which inspired us when we were looking for changes, we could bring about to improve both the environment and staff confidence as part of our action plans. Having used staff meetings and development days to get snippets of time with the team to share updates. Although we were trying to use the RAG system, we were having to split our time with other demands of the job and our timescales we were giving ourselves informally was just going out of the window. Before we knew it the six weeks break was upon us, and our manager on our back I want this rolled out not really understanding the programme herself, the work we were already undertaking behind the scenes much of it in our own time other than time being given for webinars or the occasional hour to come together and analysis findings of audits. We decided this was a good time to explore the core activities as there was flexibility to be able to move between the different areas and work with the staff and children and the less busy environment meant children focused more on adult led activities. Obviously, the downside to this was that some staff weren't all present (term time) and some saw this as opportunity to get other jobs done. Personally, I would have had the practitioners run the activities so that they gained confidence and see how it linked rather than just sharing the activity plan and verbally explaining to staff its intentions and its links to different areas of maths.

Knowing the programme was near completion and we had undergone several training webinars the manager invited us to cascade our training during our unplanned winter development day. We were to be given a 30 min

window, however as the deputy I was going to be going at this alone due to planned annual leave of the lead. Together we considered what the important factors were. We wanted to share what the programme was about, what we have been undertaking and what our vision is. We knew we needed to address maths anxiety. We reflected upon the staff confidence audit and made decision to address the outdoors within this but also the big wow moment for us as leads - Number Sense. We took the opportunity to prompt our team that maths is everywhere and in everything it's simply a case of noticing and if we use rich mathematical language, we can bring out maths within our everyday provision. Staff were invited to take part in noticing activity and asked how they would use given selected resources to promote maths. Upon concluding this cascade, staff were also asked to complete their concluding confidence audit.

We don't see these concluding findings as the end of our journey but more of an interim reflection of the journey we have been on for the past year. With so much insight gained and inspiration at our fingertips we still have tasks we have not completed, and we have a major nursery development that the leads of these areas want our assistance with.

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?

We recognised that the concept number sense was going to be the turning point for our setting as we know from our own early maths experiences not one style fits all and staff were struggling with terminology in guiding curriculum guidance. When using dice children automatically wanted to count despite adult modelling beforehand. We knew going forward we needed to showcase numbers in multiple ways to reinforce this learning and encourage staff. We had already an interactive maths display moveable items that at become lost, but the number symbol was not part of this. Therefore, we adapted this to include the symbol form. We also ensured that this was reflected in the number flashcards we had available.

We encouraged games, particularly dice and counting games to be part of our daily routine. The children soon became absorbed in a ladybird game that they were required to match the ladybird to the numeral on the leaf and was confirmed by shape it would lock on too. This then inspired us when we began developing a space within the outdoors that ladybirds linked to nature and the children's newfound interest, plus they were also enjoying examining the ladybirds we were beginning to find in the garden. We also found we could reinforce the concept as a solution to a problem that we were experiencing during busy times of children opening toilet doors on their peers, so we installed numbers with digits on each cubicle, with practitioners directing children to a certain cubicle. We also have applied a similar approach to café, using copies of our lunch mats to decipher where there is a space at the table avoid overcrowding, this time using dice patterns. We knew the change would be a success when we see other staff representing numbers in a variety of ways, weather this be props in songs, digits or representation and children recognising dice patterns.

For the outdoors both the Maths Champion Lead and I took inspiration from the webinar on Maths Outdoors, photos from other settings on both social media and in the resources section. We identified that the mud kitchen had a lot of potential and currently was an area not really utilised to its full potential. Therefore, we sorted through the collections of mud kitchen equipment, and we made up sets incorporating items of different sizes and shapes. We've developed seasonal recipe cards and are adding natural resources and access to water. We believed that with the environment organised it would encourage staff to set it up as an invitation to explore the space and the recipes prompt sustained shared thinking and view to extend further with addition of scales. We also recognised the need to create a space to become a hub for maths, where both children and staff could go and find items to support them in the moment of learning. We considered next to the construction space and a nearby tyre to accommodate tuff tray would be the perfect location. We used a work bench to develop maths station with

collecting buckets, natural objects, measuring station and added ladybirds, and shapes to the nearby fence. Our manager had recently purchased a booth as an addition for the garden, having observed the children pretending to serve ice creams in the garden. We saw that this had great potential to explore money and quantity. Although, we did not want to limit it to just being an Ice-cream counter, however this was how we were going to introduce it, making a display of coins a permanent feature and we developed a role play pack to support it. Over time its intentional that the stall will be transformed to reflect children's interests and the seasons, hopefully engaging a variety of children and encouraging all staff to have an input.

As seasons were highlighted as a measure of time in training and are most evident in the outdoors, this would be the best location to create a feature on seasons. Initially it was our intention to develop a feature showcasing the children at play during the different seasons outside, together with photos of nature throughout the seasons. However, we found it quite difficult to showcase spring through our own photos. Therefore, we resorted to using natures photos and hope to make more of feature in the future. We utilised the shed windows for this where it would be viewable to both children and staff alike. The intentions of this change would be to help children identify what season they are currently in and prompt staff to highlight and reinforce natures changes as we move through the seasons.

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?

Since embarking the programme, we seen the children become much more interested in maths and are willing to have a go and unlocked confidence. Our 2- to 3-year-olds are experimenting with mathematical language and trying to mirror adults who is representing numbers on their digits.

In reflection of some of the changes we have made the children have been observed to be checking the digits displayed on their own hands to decipher which cubicle they needed. Over time the children's confidence has grown both in recognising which cubicle is which but also representing numbers on their digits and now even using digits to combine numbers and see how they can be made up. Children are touch counting and even tracing number symbols establishing a deeper sense of numbers. Some children can instantly recognise dice patterns to six.

We are delighted that our oldest children are noticing maths in their environment more and being playful with maths. Without asking when we come together in small groups such as mealtimes children are discussing how many friends there are, grouping girls and boys. When we embarked on a number hunt, this experience became so much more, encouraging the children to notice we had children reflecting upon their experiences of lockers at swimming and talking about logos of cars and coffee shops. This has included one child making a shape with the rinds of melon one lunch time and sparked his peers to join in. Thus, this has resulted in becoming the lunchtime assistants challenge each time they have fruit platter of what shape they can make. The children are also commenting and comparing size and shapes of toys and models they are creating.

We have also found because of embedding maths into everyday continuous provision children are not only challenged and more engaged within their play. The highlight for me as the deputy was with one my own key children within the mud kitchen, the more conscientious set up with cake tins and cake cases with numerals and dough, the adult commenting in the moment led to this child sharing their own knowledge and blowing us away, with the adult continuing to challenge the child to ensure his understanding. Since this child has been observed to

engage with activities where maths is prominent and has even shared his knowledge with his peer, although not accepting of them returning their own math knowledge.

Since emphasising specific parts of the routine and commenting what the time is, children have taken more interest in what the time is and clocks in general. Moving forward this is something we are going to develop further adding clock faces to our daily routine. We have also been modelling measuring, especially when ensuring children have boots for the garden that fit best. Since children have begun attempting to measure boots against their own feet when getting ready for the outdoors.

Outside children participating in games such as hopscotch and what's the time Mr. Wolf, measuring how far ball will go and rain collecting. They were curious about the photos which appeared in the shed windows and created many discussions at first but have since become less noticed. However, children continue to learn about seasons at forest school, with adult support and through celebrations that are important to our families such as Baba Marta Day (1st March - Bulgaria).

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?

I feel families have not benefitted fully yet since we have embarked on the programme. I feel this is due to the oversight we made of not been aware of the leaflets for parents early in the programme which I feel related to the lack of consent we received to be able to observe children.

We have been able to get some of our families on board in passing comment that they are off to IKEA and we joked about bringing us back some of the tape measures as they are a great tool for promoting maths, we use them with cars and out in the garden to compare lengths of sticks. Sure, enough the next time they've been in the child has proudly presented us with these tapes and the parents loved seeing the photos of them in use.

When we began focusing on Autumn as a season, we invited our families to participate collecting autumn treasures. We had an amazing collection of items, and parents apologising for the hundreds of conkers and the sizing of the leaves. Our response was simply don't apologise we can learn so much from these and began giving examples how we would use them. From the parent's facial expressions, you could really see they did not recognise the endless possibilities that these treasures had.

We have also been promoting maths, particularly the concept of number sense through stay and play sessions. At Halloween, when we were measuring pumpkins of various sizes with pre-cut ribbons, parents were observed modelling language and engaging with not just their own child. They were also becoming rather creative with the excess ribbon if was too long. Parents have become fascinated in way we are supporting their children understand numbers in various forms and are curious about new songs we are singing as they are not familiar with the tune.

Parents have been able to enjoy and relive moments with their children of not just the core activities but of maths in actions from the photographs we have shared via the portal we use, newsletter and social media pages. They particularly enjoyed seeing the outing to the bakery to buy bread and the big garden bird watch in action, with some even mentioning that they were going to be participating too at home during the weekend.

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?

Since we have embarked on the programme gradually, we have seen more maths being embedded within provision across the area but significantly in the pre-school room. Some staff have taken more interest in the programme more than others, but we feel through cascading the training and the core activities, staff are more confident in embedding maths in part of continuous provision.

Staff have expressed through the audit tools about areas in which we as leads were able to model and direct coaching to further their understanding and build confidence. We have also been able to address maths anxiety which has created an atmosphere of positivity and staff looking at maths in a less complex way.

The core activities modelled to staff how simple it can be to incorporate maths within continuous provision and what is maths, with one practitioner commenting “wouldn’t consider that to be maths, but I can see it now.” Not all staff gained from the activities as much as others did, but discussions which followed high contrast patterns led to the development of a pattern treasure hunt activity within the garden.

The best compliment has been that staff have been inspired to attend maths training themselves and bring back new ideas themselves which they have shared within the setting to, such as a song to the tune Once I got a Fish, used now as part of 3-4’s routine to gather children alongside the windchime we traditionally use.

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?

Both the Maths Champion and I have really enjoyed accessing all the courses and webinars. It was when we began going back over our notes and reflective journals as we began to write our case study’s that it really stood out for us how much we have achieved and developed within the setting. Keeping a reflective journal wasn’t going to be an easy task for me personally as I found it tedious when I completed my initial level 3 training, even though I constantly reflect within practice I don’t write it down. Going forward I am going to write down the highs and celebratory moments so that when having a challenging day, I can reflect upon these positives.

The loose parts and the deeper look at block play made me reflect upon how successful our loose parts provision was and how detailed and imaginative the creations were and how we have lost this with this with our current cohort. Thus, this prompted a revisit of loose parts training I previously attended to refresh myself and make loose parts and block play inviting but also share my previous training with the Maths Champion. Since we have made more variety in blocks available and made activities more loose part orientated, we have seen a positive impact on the engagement of children.

As the Deputy Maths Champion, the biggest leap for me was stepping up and cascading the training to the team and students on placement. Previously I found when sharing training from CPD events hasn’t been taken seriously so the fact that staff engaged in discussions and clearly enthusiastic about the project really boosted my confidence. I was pleased that I was able to help students understand how they could link maths and literature for their activities they are required to carry out as part of their programme, embedding maths into everyday provision.

I find myself now when discussing numbers, showing them in multiple ways including my digits and seeing maths in everything. I am paying more attention to detail especially size, shape and quantity. I am enhancing provision to ensure Maths is promoted within continuous provision, making intentions and implementations clearer when sharing my ideas for planning. The Maths Champion is equally being proactive looking for further maths ideas to keep activities fresh and challenge us to consider what the intention is and how it links to the big ideas of maths.

For the setting

What has been the impact on your environment?

Embarking on the Maths Champion Programme, made both the Maths Champion and me conscious of storage of maths provision and loose parts accessibility. Therefore, we have been making storage more accessible, organised and grouped. We have considered the variety in provision available and sought materials we felt beneficial.

Temporary measures have become more permanent measures having discovered how much more focused children are working in the smaller spaces and challenging themselves. This has resulted in objects not being scattered around the nursery or invitations to explore and experiment.

To date, two maths displays have been created, the first is promoting number sense within the 3 to 4 room in which we have observed the children engaging with. The second display is featured in the 3-4's children's coat room targeted at parents, showcasing maths in actions and how its part of everyday things we do. We have been unable to conclude the impact of.

Outside the mud kitchen is not overflowing with pots and pans and is gradually becoming more inviting and being set up with provocations on a more regular basis. Staff are beginning to access resources provided for the garden to prompt maths in the moment.

With the building works nearing completion the biggest impact on the setting is yet to come. This will be developing maths hubs for both 0-2's and 2-3's which we the Math's Champion lead and deputy, together with respective teams are most excited about. These hubs will become the go to place for both children and staff alike to be able to access materials which support them in problem solving, to grow their understanding of number sense.

Next steps

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

- Make a character's telephone book, (pictures of popular characters with made up telephone numbers) to accompany telephones and keyboards.
- Support 0-2's and 2-3's in developing Math Hubs within their new spaces within the nursery.
- Share our journey with parents via the newsletter and social media.
- Share the audit findings and what we have done and are going to continue to do with staff.
- Going to continue to enhance maths outside, with development of a water station for the summer.
- Add clock faces to our visual daily routine.