

Allowing children to take the lead

Case Study 4

Duke St Nursery - Marisa Pollett

At the outset of this project Marisa and her team were curious about the fact that the PSRN results in the Early Years Foundation Stage Profile were lower than expected compared to other areas and why that was. Was it because that area of learning was particularly challenging for children or was there more to it than that?

They began their research by deciding to collect observations on children's maths through their child-initiated play over a two week period. When the two weeks were up they gathered these together and reflected on what they'd found:

"Carrying out this research made me wonder when people start to hate maths or start to think that they are not very good at it. Nursery children don't seem to do either of these things and I was surprised at the amount of maths related work they do spontaneously in their child-initiated play. They choose to do maths all the time."

Lizzie, Early Years Practitioner

"Maths is in everything, using the paper to create a picture, being aware of the space they are working within, the shapes and lines used to create a "face". When you look closely it's easy to see that in all the activities and experiences in a child's daily play maths figures in practically everything they do"

Linda, Early Years Practitioner

"It amazed me to develop and link maths with all areas of learning that I would not normally associate with maths."

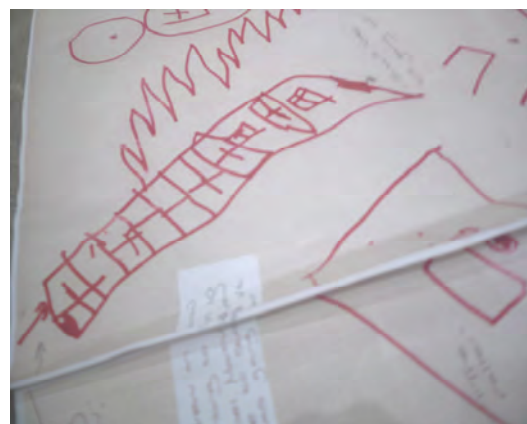
Janet, Early Years Practitioner



Laila drew "5 little snowmen" as she sang the song outdoors



Saad placed a mini kid on each shape in the block area and counted them



Marcus looked at maps and drew some flats. "We need a lift to get to the top." He drew an arrow, "It's going down now."

They were all amazed by the number of observations they'd collected. They all felt reasonably confident that they did a lot of maths with the children and yet were always surprised when it came to inputting their assessments at how many gaps were evident for children's PSRN. They found because they'd begun to specifically focus on PSRN, especially through children's self-initiated play, it made them view things with 'a mathematical lens'.

"Observations are always subjective; whereas before we might have observed the same incident and written an observation for the areas of CLLD or Creative we were now seeing the mathematical learning which hadn't been as visible before. This would then have an impact on how we step in to extend and scaffold children's learning."

The following is the nursery's description of an example of children's PSRN interests within a much broader project and of the staff following their mathematical lines of enquiry:

A project started in our group when Billy came in very excited with "a dinosaur bone" that he'd found up Rivington Hill.



"A dinosaur skeleton, lots of them, on the grass. You go in that big castle and you will see lots of dinosaur skeletons. They've been there for hundreds of years. I thought it was a velociraptor. I saw the head and the arms. There was baby ones too!"



The next day Nathan brought his dinosaur skull in from a model he was making at home. Elizabeth counted his teeth to 18 and one fell out.

"You can't get a tooth off the dinosaurs," Emma said, "they just fall out." I asked what happens when dinosaur's teeth fall out. "They get a penny from the tooth fairy!" Elizabeth said. "No, they get £45 cos they're bigger!"

The next day I asked the group what they thought about Elizabeth's idea that a dinosaur would get more money for its tooth because of its size. Their responses were as follows:

James: *I think £70 because he's really big!*

Elizabeth: *A thousand pounds!*

Billy: *Fifty hundreds!*

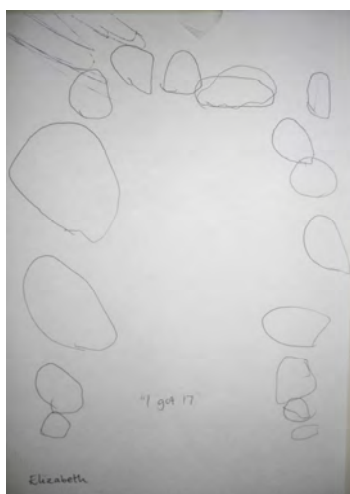
Karsen: *A hundred is many ago. A hundred years ago. Years and years ago before people they were dead, then people went up.*

Chanel: *The dinosaur's skin came off cos they died and they were bones*

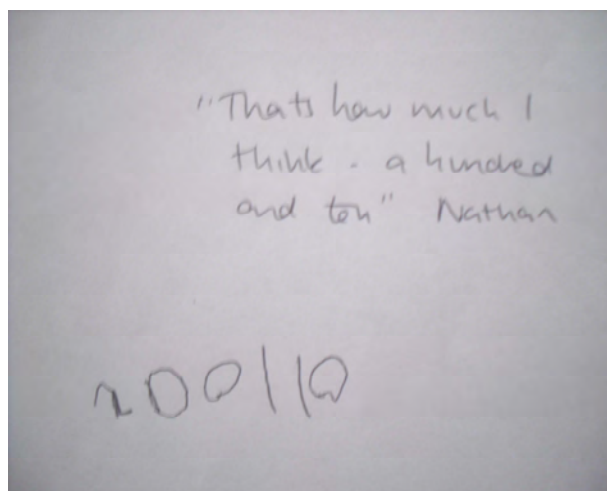
Kiean: *Give them twenty quid!*

Karsen: *I could be a boy tooth fairy.*

I asked them to show me on paper how much they thought the dinosaur would get, the children represented their amounts in different ways.

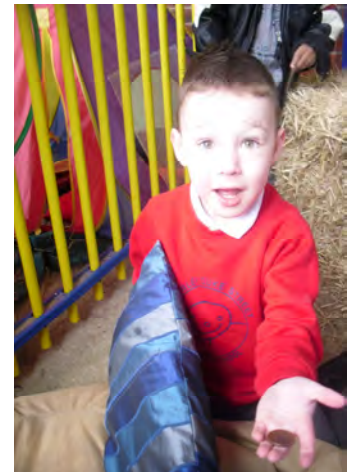


"I got 17"
Elizabeth counted the coins she had drawn



Nathan showed his amount by drawing a 'big' number calling it 'a hundred and ten'

"I could be a boy tooth fairy!" Karsen said. "Yeah, I'll be the tooth man!" Billy said. I got out a large pile of coins and we counted them together up to 49. "It's a big number!" said Billy. "It's this big!" and he demonstrated with a big jump and a stretch of his hands. Karsen and Billy wrapped up their coins in paper for the dinosaur and sellotaped it. Elizabeth and Emma wrote letters to go with their money saying "Don't worry, we will come soon" and "it says the second love because I love the dinosaur. Dinosaur's don't lose their teeth very often!" The children then hid their money packages and letters under pillows outside.



Following up the interest in the sizes of dinosaurs from the dinosaur book Leo had brought in to show we went outside to show with chalk how big we thought different parts of the dinosaurs were before checking the information in the book and measuring it out. I also was curious to see if the children were more confident to make estimates of size compared to number.

The children all confidently had a go at drawing the size of the foot and teeth of Tyrannosaurus Rex

James remembered some of the vocabulary from the book as he drew "my tooth is about as long as a banana!" and when I asked them to show how long the diplodocus would be in real life he said "taller than two houses on top of each other." The children to my surprise all drew small pictures to show the size of the diplodocus despite me hinting it was really big and they'd need to find a lot of space to draw it. "I've got space here" Hollie told me.



T-rex's foot

Diplodocus' head



T-rex's teeth



Afterwards James was still interested in this theme. He brought the model T – Rex up to me and said “How long is this dinosaur? Marisa, lets follow how big this T-Rex is....” he began to walk off in front of me counting each footstep as he went “1-2-3-4-5-6-7-8-9-10-11-12-13-14-15-17-18-15-17-18”

“It’s as big as one playground!” James concluded. “I think we need to chop all the toys down cos the first dinosaur we walked out was so big. I think we need to cut that wagon down (the shed) so he will fit.”

Do you think a dinosaur is likely to come and visit us?” I asked James.

“I think it won’t cos there’s no dinosaurs round here. We can’t see any heads can we not Marisa? If a dinosaur peeps up like this” he craned his neck up, “we would see his neck. I think he would eat us up in one gulp!”

Hollie had come along and caught the end of our conversation.

“I see a big big dinosaur and the prince will save us and I’m Sleeping Beauty and the prince will come on his horse and the dinosaur won’t eat us.” she said.

“Happily ever after!” James finished for her.

“Happily ever after. The End” Hollie agreed.

CONCLUSIONS

Children’s mathematical curiosity surrounds us every day once we begin to recognise and read it, from children solving problems such as shifting an easel to make room for their bike to pass, to their identification with the number that represents their age and their fascination with large numbers beyond which they are yet able to count. As adults, we can sometimes be concerned with our own agenda of what we ‘need’ children to achieve and miss out on celebrating the maths that is right in front of us in children’s own questions and theories. It’s our role to engage with the questions that are meaningful and excite children as these are probably the experiences that will provoke deeper learning from them. It’s essential that the children see us excited about maths and that we make our own mathematical thinking and workings out visible to the children in the same way as we model our love of books and how to read and write.

“We...are convinced that it is not an imposition on children or an artificial exercise to work with numbers, quantity, classification, dimensions, form, measurement, conservation and space because these explorations belong spontaneously to the everyday experiences of living, playing, negotiating, thinking and speaking by children.”

Malaguzzi (1998)

Though we’ve all learnt a lot through this project, we are only at the beginning of truly understanding children’s mathematical thinking and of how we can learn how to work alongside them as practitioners to support them.