

My research is based on data handling with 7 children aged between 3 and 4 years old. I have been given permission from parents to base my research on their children. Researching this on the worldwide internet, I have found information for older age groups from KS1 up, but sadly none for nursery age children. This I must admit has really made me

feel more passionate with my research. As Einstein said *“Pure*

*Mathematics is, in its way the Poetry of logical ideas.*

I started using tally charts from the start of the academic year (September 2015). This I felt would be an enjoyable way to find out where the children were at with their counting skills. To begin with I modelled this by using a white board, writing Boys and Girls, to find out the number of boys and girls. As the children came in I drew a line on either the boy's side or the girl's side. I continued modelling for almost a whole term; I was feeling a little down hearted as it appeared that this was just not of an interest to my group. I thought that I need to try this from a different perspective, so I wrote Boys and Girls on the white board and left the pen beside it hoping that at least one of the children would take ownership. This had the desired effect, I was so over joyed, but didn't want to be intrusive so I just stood watching and listening with a smile upon my face. Long lines were made to represent each child taking up the whole board. This brought in rich conversations of who was in and who was away.

As the weeks passed I became more driven to influence the children in using the data handling in different ways and for different reasons such as to explore and experience the things they preferred and also liked. During snack time we used it to work out who preferred which fruit and also which story to read, I think the hardest for me is simplifying the use of the tally chart and for children to use this independently within their own play and calculations. We started to use this during forest trips to determine which direction we should go, to begin with the children always came over to stand by me, so I took myself out of the way and before long they realised that they were able to take on this discussion making and each child stood by a preferred path. We then counted both groups of children to find the larger number. I am not saying that this was easy but perseverance was really beginning to pay off.

During play time my group in particular wanted to ride the balance bike, only having one balance bike we needed to think of a way where everyone could have a turn. I suggested that a tally chart



could help us in this. We discussed that five laps around the garden is fair, off the first child rode and when they stopped I modelled a chalk line on the path. He went around again he went and stopping by the first chalk mark he made another beside it. Soon there were children queuing up to have a turn. Before long the children continued this independently, riding around the garden and stopping to tally how many times they had been around representing five and then taking turns. It was a huge step to watch children take on this independent way of sharing resources, some children stopped at three laps and then came back later to finish of the last two. How empowered these children felt not only using tallying as a tool for sharing resources but also the social outcome of who is next this was extremely fulfilling to watch.

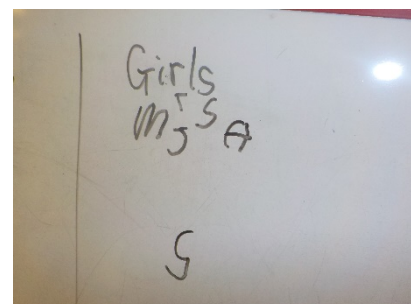
I wanted to know how far I could extend this, throughout the time using tally charts to work out how many children were in I wondered whether the group would understand the concept that if you combined two numbers together that this would create a different number. Counting the boys and then the girls I used my fingers as a visual, counting up they came to the number seven, I explained that if we add two numbers together they become a higher number. We continued this enquiry using our fingers and finding the numbers on the number line. My thoughts came to, do they realise that one is a quantity, I watched as they tallied up the boys and realising that each time they scribed a line or symbol they called out that child's names. I really wanted to explore this more so writing a sentence on the white board saying *How many seats are left on the mini bus?* I read the sentence out and one child came forward *"You need to count the children"* counting he explained there are seven,



he wrote the number seven on the board *"We need three adults to keep us safe"* the child wrote the number three *"So how many seats do we need?"* placing the number seven and three from our number line on the board he began to count the numbers together *"Ten"* he wrote the number ten on the board, putting the number seventeen on the board I asked *"How many seats are left"* he wrote the number seventeen on the board. This seemed to be too much too soon. Showing how this could be

worked out by using the number seventeen from the number line didn't help and soon he lost interest. I thought that maybe next time I would use something that he could hold and count this might be a better way of introducing subtraction.

Through this research I have watched the group become confident within themselves, the children that prefer to watch are now becoming involved with scribing symbols when using the tally chart. I have also noticed a huge difference in each child's writing skills, where to begin with they used the whole board they are now using a small space. Using different symbols such as the initial letter of the children's names they have become more confident in writing their own names too. Is this due to introducing data handling from as some experts say such an early age, I have never been more excited and overwhelmed by the outcome of this research and I fell this is



only the tip of the iceberg. Some children are now using recognisable numerals. Their general attitude to representing and taking risks in their graphics and maths has developed.

During a CPD professional development day, I was asked if I could deliver a presentation of my research. I explained and offered evidence of my research so far. After I presented my findings to a number of my colleagues, they approached me and commented that they are going to introduce it to their group, some also explained that they were highly influenced by my enthusiasm.

As I continued modelling different ways to use the data handling, I had a child approach me, now this child throughout chose not use symbols she chose to write the number, this has made me question within my research could this be a culture influence that symbols do not represent numbers. Anyway she wrote Boys/ Girls on the white board with the help of me only saying the letters of each word. She counted the Boys and wrote the number 3 counting the Girls, she wrote the number 3. So we have half Boys and half Girls in the group today, I wonder what the whole number will be if we added them together, she counted the group 6 and wrote the number on the board. If you counted me in with the girls how many would that be, without hesitation she explained 4. This showed me that when the child is ready and providing you give them the time they will always surprise you in their mathematical thoughts. I spoke to this child's mum and explained that we use tally charts to calculate how many children were in, mum was extremely honest and explained that she did not know what a tally chart was, but she uses lines to help her children to add quantities together. I found this really interesting and it's made me realise that not everyone is aware of tallying. My thoughts are that I should celebrate the work the group have been doing and put a display up so that parents can read and actually have an understanding of how data handling can support children's learning in maths, but also all area of development.



How else might you extend data handling for 3 to 4 year olds?