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Throughout 2022, our whole staff were lucky to have benefitted from the wisdom of the after school professional learning sessions run by Michael Minas and Rob Vingerhoets. These sessions are excellent value for money, with many ideas to take back to the classroom the very next day. What we have found to be really important is the engagement and richness of the mathematics conversations that can stem from simple tasks. Thank you to Michael and Rob for always making the sessions fun and thought-provoking.

I wanted to share one idea that our F-2 staff have taken on with gusto, and the power of the maths understandings shown by our students. The idea was presented as *Whole Class Pictographs* by Michael and Rob. On a regular basis, a question is posed to the class that everyone answers to create a class graph. They do this by moving a small photo of themselves to one of the given categories so a real-life graph grows before their eyes. A simple question is all that is required, such as: What is your favourite colour? What is the best sport? Which pet do you wish you had? Or after a recent excursion: What was your favourite exhibit at the Melbourne Museum? The idea is to make collecting data for statistics and probability a natural, regular process. The real power is in the discussion and investigation of the data.

Rather than being another 'add on' we needed to make sure our teachers were committing to making this a regular part of what they do, so we decided as a school that we would pose a different question weekly. Every Monday morning, a new question would be waiting for the eager F-2 students. We would spend the week discussing and unpacking the data.

It was also important to make it manageable. During the PL session, Michael shared that the size of the graph was important.

We were warned – don't make it life size on your class whiteboard because it will take up all of that space!

We decided to purchase a 60cm x 90cm portable whiteboard for each F-2 class. This meant the students could access the board from the floor and it could then be moved to working and display spaces.

Each class started with a simple column graph. The Preps were given a little more scaffolding as we wanted to ensure the task was manageable. They had just had a *Market Fresh* incursion, so what better way to put the data in context. They were asked: What is your favourite fruit? The Prep teachers already had the axes drawn up and they guided the students on how to choose their response and place their photo above each fruit. Upon completion, the students were asked to discuss what they noticed about the data. The students were able to talk about categories that were equal, the most and least popular fruits and how many people had answered. (Figure 1)

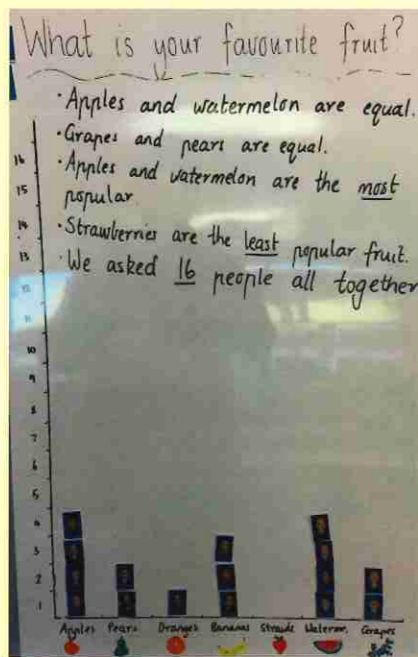


Figure 1. Prep fruit graph.

For Years 1 and 2, we chose not to give instructions. The whiteboard, along with its graph, sat at the front of the room waiting. As students walked in, they were directed to 'Please go and look at the whiteboard at the front and move your photo to your answer.' Students did this easily. Some grades combined Rob and Michael's *Tell Me*

*10 Things About* idea to get the students started with the discussion about the graphs. Interestingly, the students gave us insights into different areas of understanding. The Year 1 students spoke of 'the difference' between categories? (Figure 2), while the Year 2s identified that '2 out of 8 people who liked soccer were girls.' (Figure 3) This gave our teachers a focus for 'where to next' in our planning.

For instance, the Year 1s began an in-depth discussion about the 'difference' between numbers and exploring number sentences, whilst the Year 2s moved to fractions. If 2/8 students who liked soccer were girls, then 6/8 were boys. When added together there were 8/8 who liked soccer or one whole group. This was fractions in a real-life context.

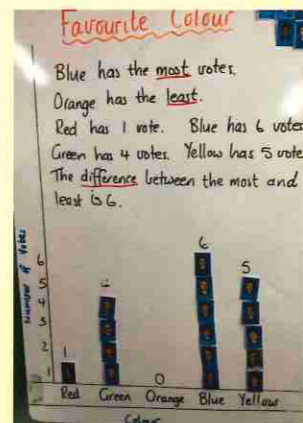


Figure 2. Year 1 colour graph.

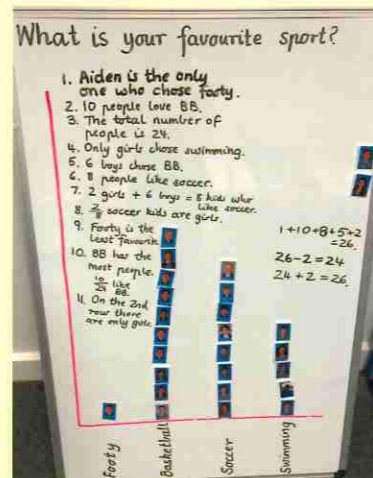


Figure 3. Year 2 sport graph.

The following week, the Year 2 students once again, made a reference to fractions.

This time the teacher used their interest to focus on equivalence: 4/8 is the same as 1/2 of the whole group. Explicit teaching was given. (Figure 3).

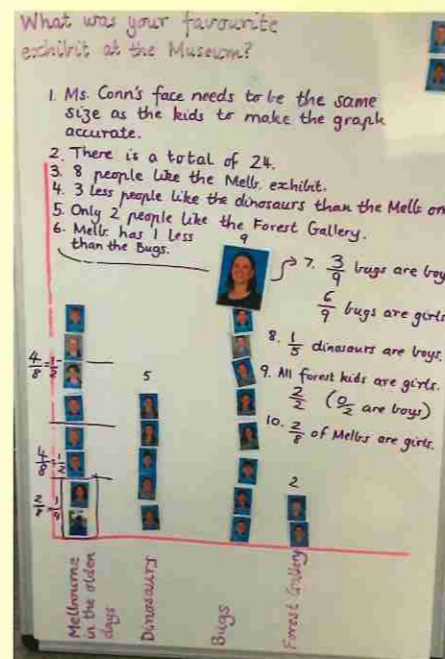


Figure 4. Year 2 museum graph.

When the Preps were faced with the question, 'What's your favourite colour?', they explained to the teacher which column was coming 1st, 2nd, 3rd and 4th, without any input from the teacher. The class had been using ordinal number as part of their daily reference to the name of the day and date.

After several weeks of column graphs, a Year 1 teacher decided she would like to see what would happen if she swapped the orientation of the board and the axis to make a bar graph. As the students came in, we observed from afar. The first couple of students paused, frowned and one asked, 'What do we do?' The other replied, 'I think it goes this way,' placing the photo in a horizontal manner to begin a bar graph. As more students came to the graph, they just continued in the same manner – there was no questioning of what they should do.

Some were put on fairly roughly, so it was noted by another, 'We need to fix the line so it looks neat.'

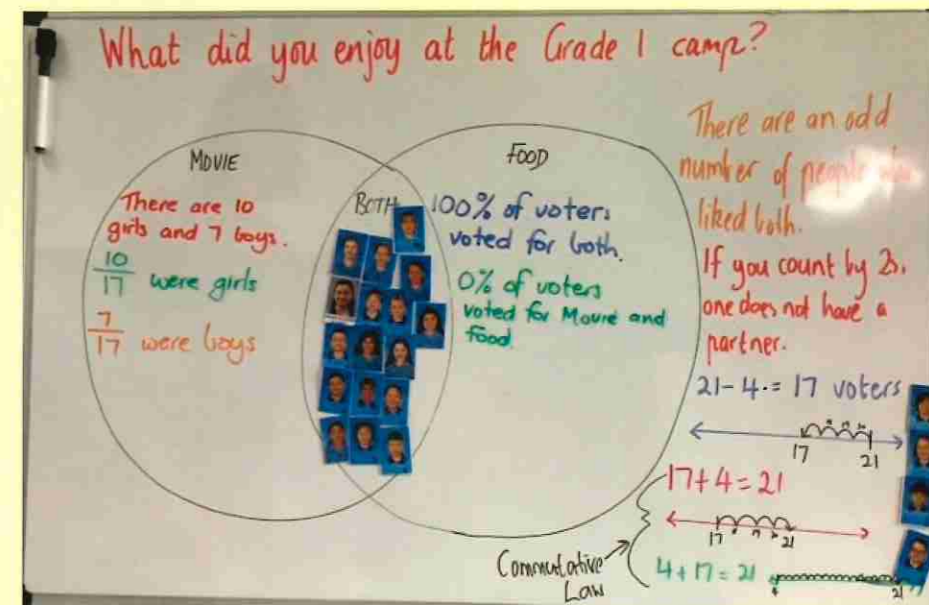


Figure 5. Year 1 Venn diagram.

They went on to carefully alter each photo slightly so there was an obvious line.

The opportunity to explore a variety of data representations is wide – column graphs, bar graphs, Venn diagrams. The Year 2 teachers are considering presenting a line for students to place themselves along a continuum. Rather than a 'possible', 'impossible' line, they are thinking of inviting students to place themselves on a continuum indicating their preference for savoury or sweet foods. It'll be interesting to see how that turns out!

Some handy tips we have learnt along the way include using our school management system, Compass, to print and laminate a photo of each student so they are all the same size. Rather than using Blu Tack on the back of the photos, you can use a strip of magnetic tape (provided you have magnetic boards).

Instead of buying magnetic strips, we cut up some of the magnetic advertising you receive in the letter box from real estate calendars or the local electrician or plumber. A strip of double-sided tape can easily stick the magnetic strip to the back of the photos.

At the end of each week, teachers take a photograph of their board, then print and add it to their class 'maths graph book'.

It is a popular book at reading time and is invaluable to return to in order to make links with new learning... 'Remember when we made a bar graph about...'

What I love about this is how a simple, regular task places maths into a real-life context for students. We are constantly being pleasantly surprised by what our students are noticing and how they are linking areas across the maths curriculum.

Who would have thought that following a Year 1 camp experience, the teacher could pose a wondering from the Venn diagram which led to a discussion about percentage? The teacher noticed, 'This part in the middle has the whole class - everyone. I wonder what this would mean as a percentage.' A couple of students burst out, '100%!' (Figure 5). I am also impressed with our staff who are constantly thinking about where they could go next to deepen understanding or how they could expose students to a new way of displaying and sorting the data. I encourage you to give it a try!