



# Professional Knowledge

## Standard 2 – Know Content

### Significant Episode: Moment in Maths

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#### *Finding 2.3: Contexts*

*Know how mathematics links to contexts beyond the classroom so it can be taught through rich, life-like activities.*

I have moments in every maths lesson where the students in my class show me how much they are learning. The talk among them amazes me, as they take my lessons to places I had not thought of and ask me questions that I am not prepared for – this is 'Scary Good'.

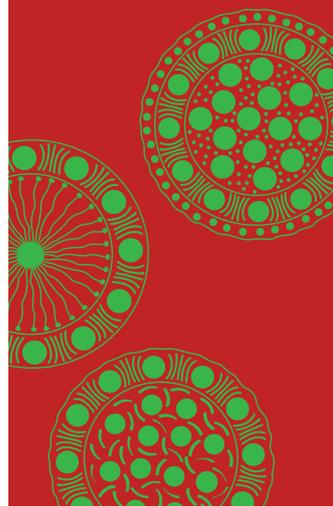
I have never liked maths, and upon reflection have probably taught my lessons that way. Visual arts has always been my thing. It engages me; maths did not, and I saw no use or need for it. This year has given me cause for much reflection and the realisation of what a fool I have been. Visual arts and maths are so closely intertwined. I use my maths knowledge everyday while planning and producing works of art. Once I began seeing the path instead of just wandering around it, I became engaged. I wanted my students to become engaged in maths and to see a purpose and need for maths. Doing maths through visual arts has given me that hook; it has given me a brand new perspective on teaching the subject.

I believe that once you are engaged you have that chance to learn, to open doors. It makes you ask questions, you want to find out more. This year, my class has shown me this.

I have always taught fractions using oranges or pizzas (you know what I mean). This year it was through the perfect face. Artists use rules to draw faces. Once you know these rules you can draw any kind of face and it will look like a face, not like some sort of 'alien'. It involves fractions. Half way down the head you place the eyes, halfway between the eyes and the chin you place the nose, a quarter ways between the nose and the chin you place the mouth. This information was given to the class verbally and visually. There were lines drawn to show position and the symbols to indicate half and quarter. The students were engaged, they loved the fact that their portraits actually looked like faces, they were proud of their pictures. The next part of the project was for the students to draw a self-portrait. They were given pictures of themselves and the idea was for them to apply the rules they had learnt about drawing faces and apply them to their self-portraits. It was at this point that the questions began and learning took off. After drawing an oval for his face and dividing the face in half both horizontally and vertically, one student asked me what the symbol for half meant on the board. I went about explaining the concept using pictures, he understood but then asked what would happen if you had more than two pieces. Another two students joined in the discussion about halves and quarters, talking about cutting things into four bits and taking one bit and what would you have. They both showed him one quarter which he understood but then corrected them by adding that I had one quarter and he had three bits left. I asked him what that would look like, and he showed me. The other two students exclaimed "Oh Yeah", almost like they had also just got the concept. It was an *ah ha* moment.

Throughout the portrait lesson these types of discussions continued. I sat next to (one of these students) who showed me his portrait. He had drawn his oval like shape for the face, but wanted to point out to me its position on the page. "It is just like the photocopy, see it's the

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same distance from the side of the page to the chin, I measured it". The student proceeded to take out his ruler and show me his accurate measurement. The students around us at the time began measuring the spaces around their own portraits and matching them to the photocopied version. Some students were concerned that their pictures didn't match their photocopied picture, however one student then said to me in a way that was half statement, half question, "It doesn't really matter where you start on the page, as long as one thing matches the other thing in your picture". Upon further discussion with the group, what she was actually talking about was proportion and that the distance between her chin and her collar was the same or her ear and her shoulder was the same. This was an eye opener to me and a great teaching moment. To actually hear their thought process out loud, to be actively engaged in their discussion, be a part of the discussion and not leading the discussion was very powerful. All ideas were valid and appreciated by those involved. One statement became the jump off point for discussion and debate and more questioning. It wasn't a teacher and student moment, it was more like a group of people having a talk, each with some knowledge to bring to the table, putting it all together and finding a new understanding and, for some, a solution.

I have noticed the correlation between engagement and questioning this year more so than in other years (this maybe because I am enjoying teaching maths this year). When the students are right into what they are doing they want to 'find out' in a positive way. It doesn't seem to be about getting the answers so that they can get the task over and done with. It seems to be about learning more. And the wonderful thing is, is that questions lead to new places and more questions and new learning and then more engagement. It's an engagement cycle. I particularly enjoy the parts of my lessons when an individual on a learning journey is joined on their travels by others. The others may get off that journey when they come across another path they want to explore, but the great thing I have learnt, is that they are all heading to the same place – that maths is not boring, horrible and something to be loathed. It is interesting, challenging, useful and fun.

#### Some questions to prompt discussion:

1. *What are the powerful learnings for Iain in his story?  
How might these translate to the classroom?*
2. *Iain refers to learning that could be considered as two-way i.e. learning between himself and his students. Why has this learning been important to Iain?*
3. *What other interesting or important aspects are in this Significant Episode?*



A student's self portrait using fractions