Professional Practice

Standard 3 – Plan

Significant Episode: Learning Through Hands On Activities

Nicky Collocott
Gladstone Cluster

Finding 3.7: Kinaesthetic

Use kinaesthetic pedagogical practices as a point of entry to abstract mathematics knowledge.

Background

Through the professional development and collaborative sessions I was involved in, it became clear that our Indigenous students seemed to learn mathematical ideas better when a 'hands-on' approach was used. I decided to incorporate as many 'hands-on' activities as possible to help the students grasp the mathematical concepts.

"I believe that the hands-on approach has seen Indigenous students (and other students) engage with mathematics in a more positive way."

What happened?

There were many examples, but the following activities are two I used to help the students learn about circles.

1. We looked at relationships between circumference and diameter and radius lines by:
   - Cutting out a piece of wool of any size between 2 and 10 cm
   - Using our piece of wool to draw a circle one end (by holding one end down on the centre of our page and the other end onto our pencil)
   - To record the group's measurements of the wool
   - Estimating how many times our piece of wool would be needed to go around our circle and checking with our piece of wool
   - Recording all our estimates and measurements in a table
   - Analysing our table to see if there were any similarities
   - Writing what we found in a mathematical way – we discovered that if we doubled every one's piece of wool then multiply it by approx. 3, we could work out the circumference)
   - Introducing pi and its value
   - Checking pi could be part of the relationship and how
   - Extending it by working backwards (knowing the circumference, their working out the diameter or radius).

2. We looked at area of a circle by:
   - Using our same piece of wool to draw a circle on 1 cm graph paper estimating the number of square inside the circle
   - Repeating the process of collecting data in a table
   - Looking for relationships
   - Coming up with a mathematical way of writing it
   - Checking that it worked for everyone
   - Extending this by working backwards (knowing the area, and then working out the radius).

I believe that the hands-on approach has seen the Indigenous students (and other students) engage with mathematics in a more positive way…I think the increased engagement and improved attitude will eventually lead to improved results.

Some questions to prompt discussion:

1. ***Can you think of other mathematical concepts that students might understand better when they see, feel and can play with a concrete example of the concept?***
2. ***How could their teacher make links to abstract or symbolic representations of the mathematics?***
3. ***What other interesting or important aspects are in this Significant Episode?***