Learning to be Flexible with Numbers to 10

Threading Ten Friends and Plug Catcher across the term

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Aaron is a long time supporter of working like a mathematician and has made considerable use of Calculating Changes, Mathematics Task Centre and Maths300 throughout his career - a career which has included a suburban primary school in Melbourne, secondary work in Queensland and teacher training work in Eritrea and Ghana prior to his current position.

I teach a Grade 1/2 class in a remote aboriginal community in the Gibson Desert, WA. It's a difficult context because all the students speak another language at home. Furthermore, in the students' own language, they only have words for small quantities of numbers. Large numbers are referred to as 'pirni' – many. Across term 3 I have threaded the two activities Plug Catcher and 10 Friends.

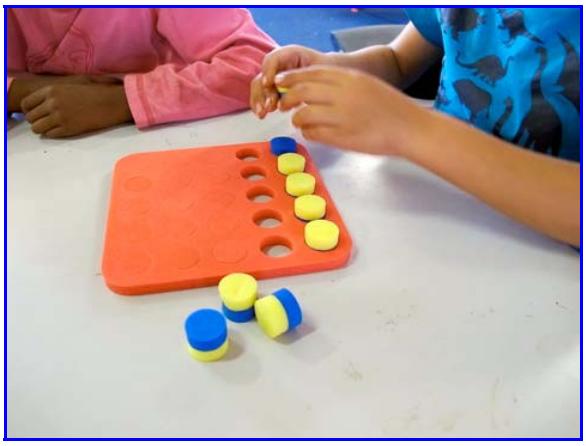
I have found threading is particularly useful in an ESL context. I think this is because the activity becomes second nature to the students. This means they don't need to use much of their cognitive capacity to know what to do. This frees up more cognitive space to think about what they are doing, look for patterns and develop new ways of thinking about numbers. Furthermore, I think the students need the repetition. Short frequent sessions may be more productive than extended sessions once a week.

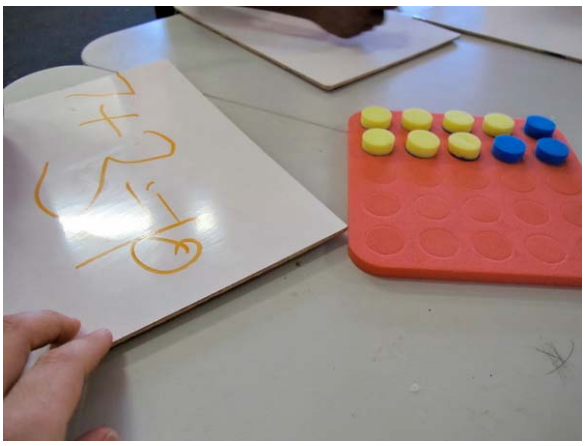
Plug Catcher was an instant hit. Students' embraced the story of a monster coming to eat some plugs, and enjoyed the challenge of trying to think of how many were left. It helped them to start to visualise in their mind what they couldn't actually see.

Above left: 'Girl' by Kieda Below Left: 'Princess' by Lyallah
Above right: 'Girl' with 'Growler' by Aaron

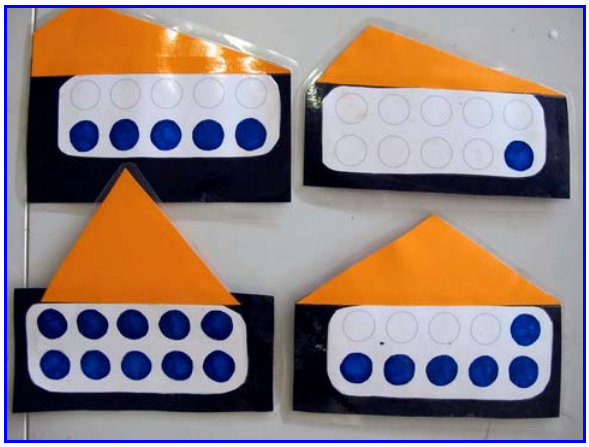
Ten Friends didn't work so well to start with. Perhaps because students weren't as confident with numbers to 10 as they are now. Perhaps because I hadn't added a story they enjoyed.

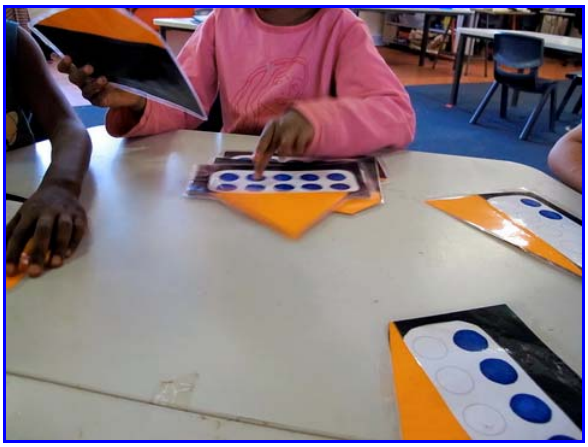
On my second attempt introducing the activity, I repackaged it as 'The House Game'. Students' out here don't stay at the same house every night, and families regularly move around. So I thought the context of a yellow and blue family sharing a house would interest the students. It did.





From the Poly Plug Frame, I also made some 10s frames to look like houses. I use them as flash cards prior to playing the game. Students compete to say how many beds are full at the house. At the end of the game they count up all the coloured dots they have to get their score. We talk about 'quick ways' and 'slow ways'. For example, counting by ones is a slow way, whereas if we can see one full row, we know that is five, so we can count on or count back to get an answer quicker.





A recent encounter with one of my students at the regional sports carnival left me pleasantly surprised. There was a huge pile of water bottles stacked in groups of 6. My student looked at them and said *Mr Aaron, that's six*. I was impressed and wanted to press him a bit further so I said, *You're right, it is. And look at this* (pointing to the rows of 3) *3 here, plus 3 here makes…*

Six! he said. *And look here Mr Aaron. 4 + 2 = 6,* he added. Nice to see that he is noticing some of the mathematics that can be found in his world.

I hope that the work this term can lead towards new threaded activities like Bridging 10 and Nine and Over next term.

Note: Nine & Over is a Maths300 lesson that includes Calculating Changes activities such as Counting Machines (using the 0-9 machine), Predict A Count and Win A Flat. It includes an extensive piece of software. Ten Tens is another Threaded Activity that helps with Place Value.

Read more of Aaron's work in the Research & Stories section of Mathematics Centre. Visit: http://www.blackdouglas.com.au/taskcentre/do.htm and scroll to find:

- **Menu Maths**: Aaron was one of the first to develop the concept of Menu Maths
- **Problem Solving in Eritrea**
- **Reflections on Rote Learning**: from Ghana