Story: The Big Carrot
Author: Alison Hawes
Illustrator: Stuart Trotter

Teacher: Liz Pinder
Setting of the class / school: A Reception class in a primary school in Galashiels, Scotland
Age group: 4-5 years old (Primary 1)
Number of children in the class: 22

Learning intention: To be able to identify, continue and create a growing pattern
Key mathematical vocabularies: more, equal steps, pattern, visualize, describe, conjecture
Resources needed: Cards made of the different characters in the story – one for each time they are mentioned; cubes, beads small loose parts which children can use to make their own patterns from; Cuisenaire rods and Numicon.

Synopsis by the publisher:
This is a simple retelling of a Russian or Slavic traditional tale, called 'The Enormous Turnip'. It is a cumulative type of story in which a growing number of people help an old man to pull up an enormous turnip. In this story, because of phonic restrictions, the turnip has been replaced by a big carrot. The moral of the story is that if you help others, you will be rewarded.

Starter / Teaching input (10 minutes):
I read The Big Carrot story to the children and then gave each child a card with one of the story's characters on it. I re-read the story and as I read it, the children were asked to construct the pattern of the number of people pulling the carrot at different stages of the story (see Figure 1). When we had finished, we looked at the pattern we had made, and I asked the children how they might describe the pattern we had made. The children recognized it as the 'staircase' pattern which we had previously created with Numicon and Cuisenaire Rods. We counted each 'step' of the staircase and gave it a corresponding numeral as well as Numicon and Cuisenaire Rod representations.

I then asked the class if they could help me create success criteria for creating a growing pattern. One child said that we had to work from left to right and another child said that we needed to add one more card each time. I later added that the steps (i.e. the cards) needed to be of the same size (see Figure 2).

Main activity (15 minutes):
The children were then asked to make their own growing pattern using resources available in the classroom (e.g. sticks, plastic bears, etc.) (see Figures 3 and 4). The majority of children worked independently and were able to easily make a growing pattern. I was able to then go round the class and talk about their patterns and discuss any mistakes they had made. For example, one child made a lovely 'staircase' using 3D shapes (i.e. blocks). However, it did not follow the 'one more rule' as the blocks were of different heights, so instead of adding one more (identical) block to the pattern, '2' was represented by just one single taller block instead, for example (see Figure 5).

Plenary (5 minutes):
We looked at the original pattern which we had made using the story, and I encouraged the children to conjecture what would happen next in the pattern. They were easily able to give the next terms of the sequence (e.g. if another person or animal helped the original seven characters pulling up the carrot, then there would now be eight characters, and so on).

Reflection:
This lesson is part of a series of lessons on growing patterns for which I use a variety of different stories (e.g. 'Bear in a Boat in the Borders' by Jennifer Docherty and 'The Napping House' by Audrey Wood). I find that stories or 'real life scripts' are a more effective way for children to be introduced to mathematical concepts. Overall, the children in this lesson were able to recognize and create simple growing number patterns as well as identify and correct mistakes. If I was to do the lesson again, I would spend more time trying to explain to the child who had created a growing pattern with the 3D shapes about why his pattern did not meet the success criteria we had created.

Figures:

Figure 1: Completed pattern with the pattern also being represented using Numicon, Cuisenaire Rods and numerals.
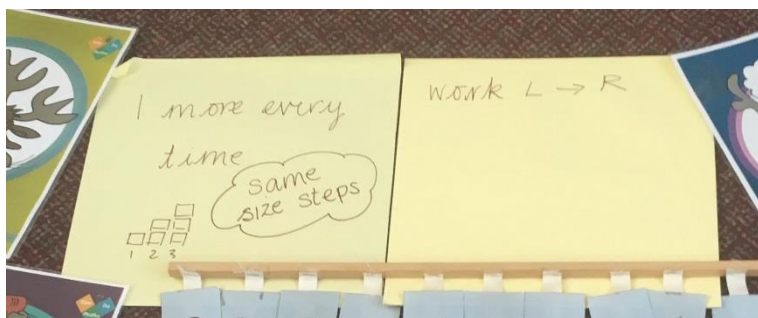

Figure 2: Once we had completed the pattern, we co-constructed the success criteria.

Figure 3: The children were challenged to use the resources available to create their own growing pattern.

Figure 4: A variety of resources were used.

Figure 5: A lovely staircase but not a growing pattern as there was not an increase of one block each time.