

Unit NE1: Building Confidence and Enthusing Self-Motivation

Primary Years

Number and Algebra

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Nerang Cluster

# Make It Count

## Year Three

### Action Learning Cycle One

## Round 1- Problem Solving

### Back to Front Maths - Grade 3 Moderation Task (beginning of year)

#### **Emma is Playing Fly**

The task involved the maths related to playing a simple children's game, namely doubling and halving (2 children = 4 shoes)

The game Fly was demonstrated to the class using children and their shoes. Children were then given the opportunity to play the game to develop familiarity.

#### Observations

All of the target children had difficulty with the first problem which involved halving the number of shoes to find how many children. **How many kids were playing Fly with Emma?** It was accompanied by a pictorial representation of the game. However with this question and follow ons, none of the 4 children were able to link their thinking to the basic doubling and halving needed to solve correctly. Despite rewording, prompts to use the picture, or use doubles and modelling think alouds, none were able to determine a suitable process to arrive at the answer. The 'with Emma' part was poorly interpreted, even when demonstrating which shoes were hers and which belonged to her friends. Unable to answer the first question also led to difficulty with follow on questions.

Paris came close, knowing that there were 3 children, but could not relate that there was Emma and only 2 friends.

Paris also had difficulty relating 3 children = 6 shoes (only counting 3 shoes). In subsequent questions she still counted 1 shoe per person despite prompts and the teacher demonstrating using the pictorial representation.. Paris did have some problem solving skills, but lacked understanding and was unable to communicate her reasoning.

#### Sam

Despite an illustration and repeated guidance and prompts (these are Emma's shoes, 1 friend's shoes, another friend's shoes, how many friends?) Sam refused to change his original estimate (10). He showed little interest in doing the task even orally. He also confused the number of children with the number of shoes. Sam became quite agitated and upset about not being able to do the task. He refused to draw a picture to help or continue the task.

Laylah counted shoes, not children when solving the problem, then forgot to count 2 shoes per person even with prompts. She was very confident when attempting to explain, but her answers were way off track. Laylah's answers were confused and did not answer the question.

Shamirrah used 1 to 1 correspondence (1 shoe = 1 person). She looked at the 5 spare shoes and said 5 children. I was unable to encourage her to change her answer even when putting shoes in pairs and counting 1 person, 2 people, 3 people. When 5 more kids came she simply added 1 more! She had little understanding despite prompts to draw, try again, etc. Shamirrah was unable to explain her thinking. She left the majority of the questions unanswered and said she didn't know (even when visually presented to her)

	Problem Solving	Reasoning Communicating	Understanding Reflecting
Paris	E	D	D
Sam	E	E	E
Laylah	E	D	D
Shamirrah	E	E	E

## Emma is playing Fly with her friends

Play the game "Fly" with a group of students then answer the questions below.

### Instructions for playing Fly:

1. Students remove their shoes, and put them in a line so that they are one step apart. Students line up at one end. The person on the end of the line is nominated as the "Fly".
2. Each person walks through the shoes, placing one foot between each shoe, without touching any of them. If anyone touches a shoe they are out or if anyone takes two steps between the shoes they are out.
3. The fly walks through the shoes, and then takes a big jump at the end. The place where they land is the new position for one of the shoes. The fly nominates which shoe to move to the new position. This leaves a gap somewhere in the line of shoes so that the gaps become uneven so that the students need to take bigger steps or jumps.
4. Repeat steps 2 and 3, eliminating players as they take 2 steps between successive shoes or touch a shoe. If the fly is eliminated, choose another player to be the Fly.

### You will need:

- A photocopy of Student work sheets for each child, A3 sized
- Scissors, glue and pencils (pencils to draw extra items when needed)
- A photocopy of the student record sheet for you to complete as they are working.
- A blue, black and red pen.

### Questions to ask students:

1. Emma played the game of fly with her friends. Their shoes are shown. How many friends did Emma play with?
2. Five more kids joined the game. How many shoes should there be now?
3. More kids joined the game. Now there were 20 shoes. How many kids joined the game?
4. The kids playing Fly decided that they wanted to have 24 shoes, how many more kids would need to play? Draw the kids needed altogether, and circle any who joined the game to take the shoes from 20 to 24.
5. One kid got out. He decided to leave the game and took his shoes with him. How many shoes would be left?
6. Some more kids left the game and took their shoes. This left only 18 shoes. How many kids left the game?
7. If for questions 1 and 2 there two more children, how would your answers change for questions 1-3?
8. Verbally asked for children who answered Q7 easily: Would your answers for the rest of the questions change? How?



## Using purpose and real life situations to build confidence

### Enthusing Self-motivation

The following activity showed how making maths activities purposeful and real life not only lifted motivation to join in, increased the desire to present quality work and developed a sense of pride for all, but resulted in making learning fun and built co-operation skills across the class.

All 3 target children gained a lot of self confidence in their maths ability through this simple activity and are more willing to participate in lessons as a result.

One of the big success stories during Round 2 was Shamirrah, who had spent most of the year reluctant to have a go at maths. She generally

- copied everything from classmates
- looked for excuses to not have to do maths
- was reluctant to give an answer of any description for maths problems
- relied heavily on teacher assistance and prompts to attempt maths tasks.

Our C2C maths assessment involved completing a set of cards for a pretend game with number patterns represented in a variety of ways. The last being one of own choice. Shamirrah struggled with the concepts involved and was unable to think up a suitable pattern to complete the card game sheet.



Once faced with the idea of turning the assessment task into a real game and presenting it, many children became very focused. Small successes encouraged and enthused others, giving them the confidence to achieve. Children who often gave up during longer maths sessions were unstoppable.

Even though she had missed the introductory session, Shamirrah suddenly became enthused, working tirelessly to emulate the efforts of others. Like several students she even worked through her lunch hour to catch up and finish her game presentation.



Shamirrah asked for help with the more difficult parts, and checked with a friend to see that her easier pattern was correct. She was excited about playing her game with classmates and knew it had to be correct to play successfully.

Part of the activity involved presenting the game in a folder format and writing rules for the game (current procedural genre for C2C English)





Both Sam and Shamirrah suddenly found that Maths could be interesting and fun. All 3 target children were very focused and self-motivated, working tirelessly on the task without the usual complaints. Self confidence received a huge boost and all children were extremely proud of their efforts.



Playing the game provided valuable practise with the variety of number patterns each child had created and made maths learning fun. Having made the game themselves made it especially important to each of them. Not only were maths skills a focus, but social skills also practised and co-operation developed. It was pleasing to see the confidence and motivation from this real life maths experience spread to enable the children to attempt more abstract maths activities with excitement.