MiS Presentation

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Contents

Context

- This projcect was conducted in partnership with Our Lady and St Thomas catholic school (OLST)
- OLST is a co-educational primary academy located in Willington for students aged 4 - 11
- OLST is a small school with only on class of 18-20 students per year
- Project was conducted with the year 6 class

Initial consultation with school

- Increase confidence in girls ability in maths
- This goes hand in hand with decreasing maths anxiey in girls
- In the long term this could posisbly increase performance in girls, increasing number of girls achieving 'Greater Depth' in SATs

Aims

- Increasing confidence
  - Belief in their own abilities
  - Nationally girls peform at a very similar level to boys in SATs (Gov.uk, 2024)
  - Boys tend to believe more than girls do that their intellectual abilities cause their high marks in maths (Georgiou, S. N. et al, 2007)
- Decreasing anxiety
  - Maths anxiety: feelings of nervousness or apprehension in response to a current or future situation involving maths
  - Women are more than twice as likely to experience maths anxiety than men (National Numeracy, 2024)

Format & Content

- Lunch time sessions about 30 minutes long
- Only girls in the session
  - Girls are said to be more confident and more likely to express themselves in a single sex environment
  - Girls reported that they felt more comfortable and liked science and mathematics more in a single-sex setting (Baker, 2002)
- The content of the sessions is not defined by the aims.

Session 1: Introduction

The aim of this project is very individual, so it is important to get to know the students I am working with.

- What is the level of maths anxiety among the girls?
  - Majority of girls reported some symptoms of maths anxiety
- What are the causes of maths anxiety?
  - Judgement
  - Fear of being left behind
  - Frustration
- How can these causes be treated?

Session 2: Möbius Strips

- Design:
  - No numbers
  - Focus on the process rather than the outcome
  - Intrinsic value intervention
- This session involved the girls constructing and exploring the physical properties of a Möbius strip
- The aim of this session was to allow the girs to enjoy the process of exploring new ideas

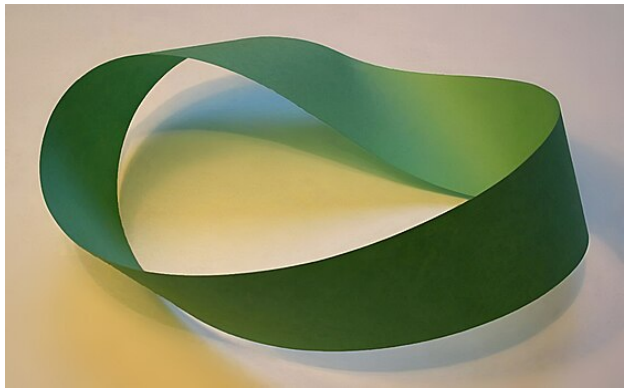


Figure: Möbius Strip

Session 2: Möbius Strips

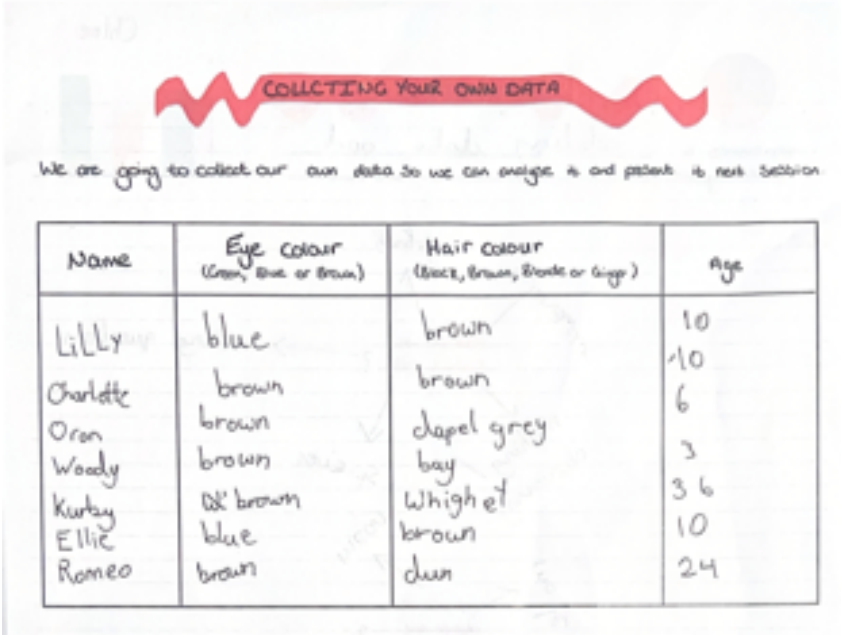
- The session consisted of 3 main activities
  1. Creating the Möbius strips
  2. Drawing on the Möbius strips
  3. Cutting the Möbius strups

- Evaluation
  - The session defnitely promoted curiosity and creativity (maybe a bit too much)
  - The students enjoyed working through not understanding something
  - Some of the activites were too fiddly

Session 3: Statistics - Data collection

- Design:
  - Utility value intervention
  - Getting comfortable disussing maths

1. What is statistics?
   - How do we collect data?
   - How do we analyse data?
   - Why is statistics useful?
2. Students collecting their own data
3. Talking about maths at home


COLLECTING YOUR OWN DATA

We are going to collect our own data so we can analyse it and present it next Session

Name	Eye colour (Green, Blue or Brown)	Hair colour (Black, Brown, Blonde or Ginger)	Age
LiLLy	blue	brown	10
Charlotte	brown	brown	10
Oran	brown	dapel grey	6
Woody	brown	bay	3
Kurtay	DK brown	Whight	36
Ellie	blue	brown	10
Romeo	brown	dun	24

Figure: Example of data a student collected

Session 4: Statistics - Data visualisation

- Why do we visualise data
- Creating their own data visualisation
- Physical representations of statistics
- Evaluation:
  - Students developed understanding of basic statistics
  - Didn't create as much discussion around mathematics as planned
  - Mode of delivery was very similar to a lesson

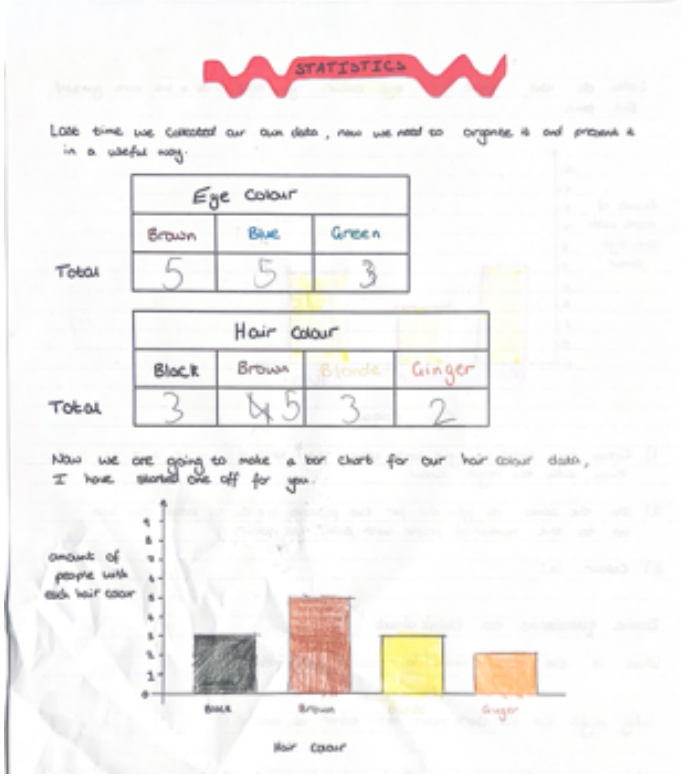


Figure: Example of bar chart created by a student

Session 5: Coordinate Grid

- Deisgn:
  - Change mode of delivery
  - Make the session activite
  - Incorperating cooeprative groups in problem solving situations
- This session involved the students solving problems which would lead them from point to point on a coordinate grid
- The mathematics required was taken from lessons I had seen the students complete
- Each student had to solve one clue to lead them to the final anwer
- Evalutaion:
  - Students were very eager to solve clues
  - Students didn't understand coordinates as much as hoped
  - The problems given were effective reivison for the children - "We had to do really difficult maths that we learnt ages ago"
  - Sacrifised quantity of learning for enjoyment

Session 6: 1-2 Nim

- Design:
  - Student ownership, developing their own tool they can use in the future
  - Students work together and share their solutions
- This session involved the students developing their own strategies for a simple game
- This task generalises allowing students to learn some basic problem solving strategies

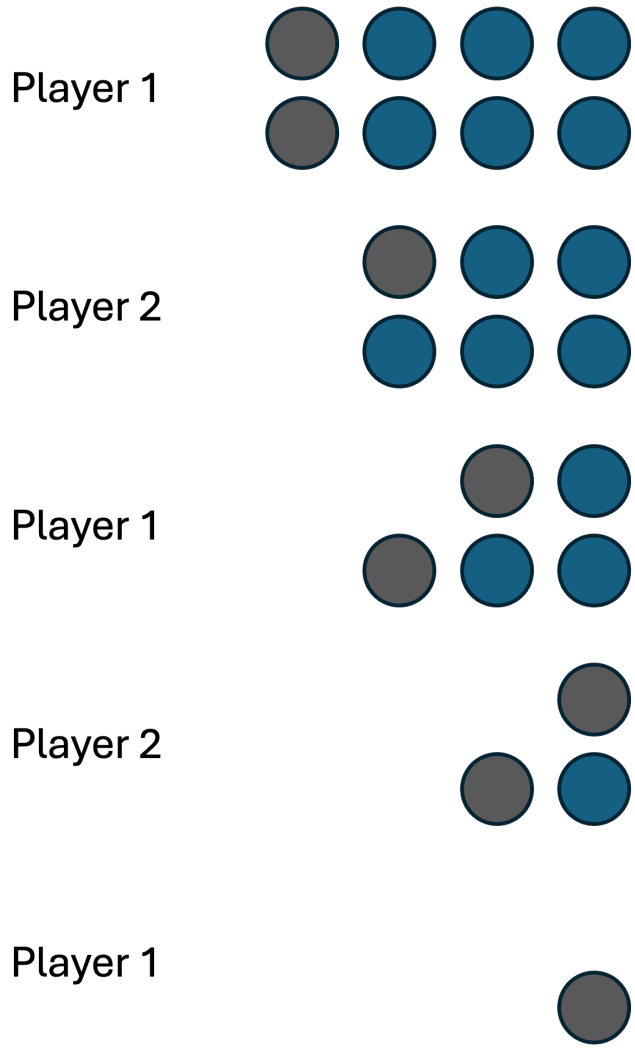


Figure: Example game of Nim

Session 6: 1-2 Nim

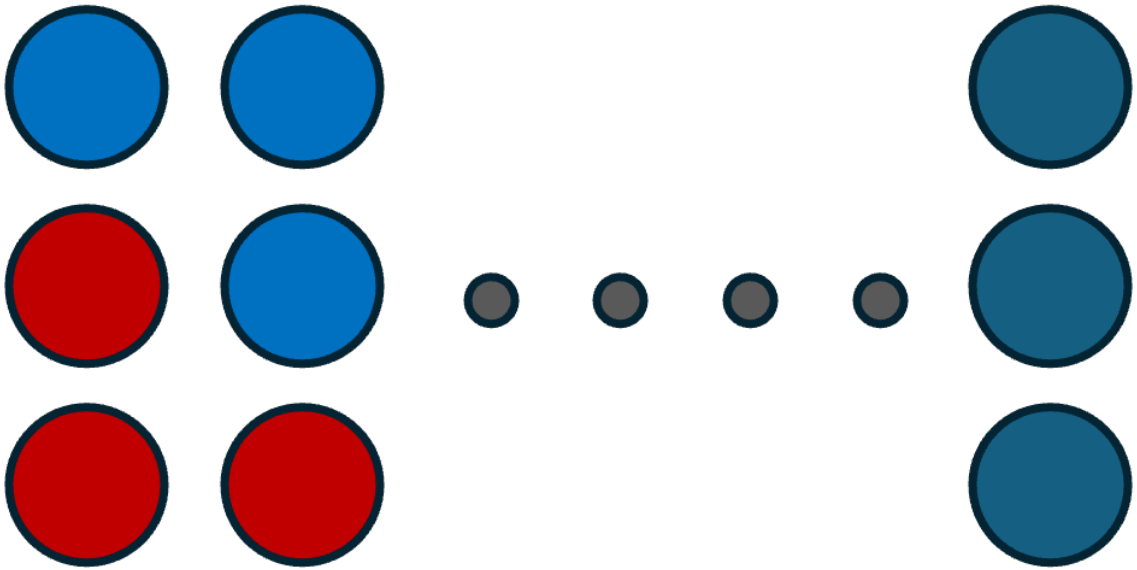
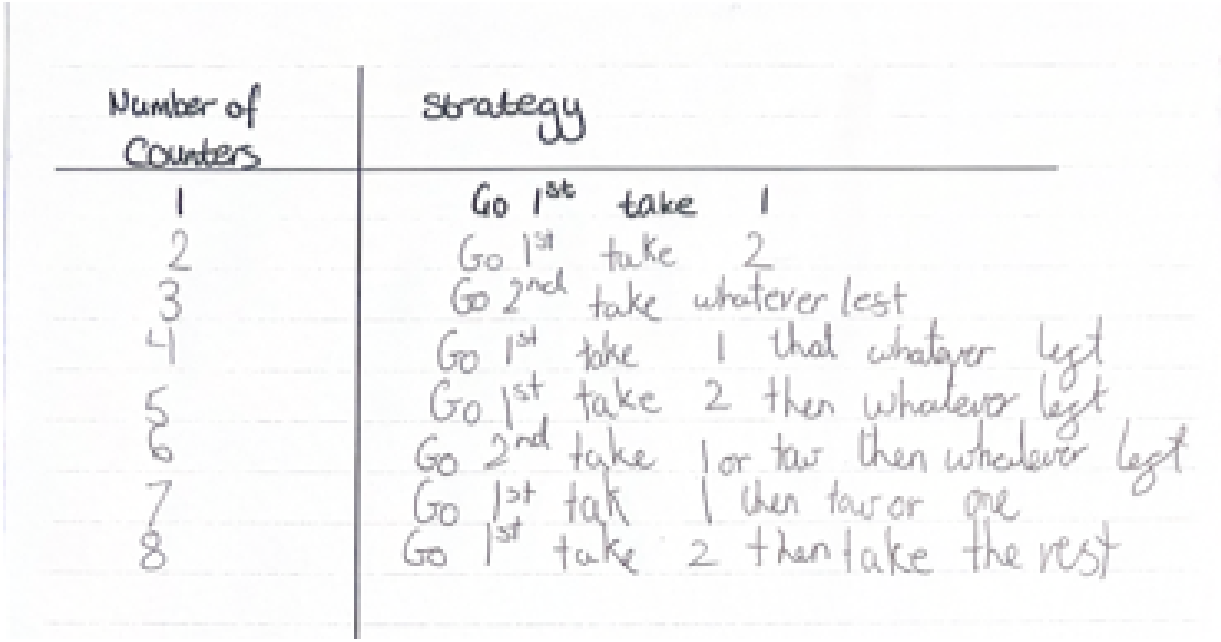


Figure: Solution to Nim for 3n counters

Session 6: 1-2 Nim



Number of Counters	Strategy
1	Go 1st take 1
2	Go 1st take 2
3	Go 2nd take whatever left
4	Go 1st take 1 that whatever left
5	Go 1st take 2 then whatever left
6	Go 2nd take 1 or two then whatever left
7	Go 1st take 1 then two or one
8	Go 1st take 2 then take the rest

Figure: Example of data a student collected

- Evaluation:
  - Students were keen to complete the task as they wanted to beat me
  - Some of the more uninterested students seemed to benefit from this type of session

Evaluation

- Increasing maths confidence
  - Noticiable increase in participation throughout sessions
  - Difficult to distinguish causes of confidence
- Decreasing maths anxiety
  - Design of sessions reduced maths anxiety within sessions
  - All students are willing to volunteer answers in sessions, which they may not do in regular maths lessons
  - Maths anxiety was definitely still present in some cases
  - Many methods for dealing with maths anxiety are without of the scope of this project

Summary

"I enjoyed doing your sessions but I still don't like maths lessons"