

MiS Presentation

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- Context
- Aims
- Format & Content
- Session 1: Introduction
- Session 2: Möbius Strips
- Session 3-4: Statistics
- Session 5: Coordinate Grid
- Session 6: 1-2 Nim
- Evaluation

- This project 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.

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

- Increasing confidence
 - Belief in their own abilities
 - Nationally girls perform 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)
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- 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
- 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 girls 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 strips
- Evaluation
 - The session definitely promoted curiosity and creativity (maybe a bit too much)
 - The students enjoyed working through not understanding something
 - Some of the activities were too fiddly

- Design:
 - Utility value intervention
 - Getting comfortable discussing 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

Session 4: Statistics - Data visualisation

- Why do we visualise data
- Creating their own data visualisation
- Physical representations of statistics

- 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

Session 5: Coordinate Grid

- Design:
 - Change mode of delivery
 - Make the session active
 - Incorporating cooperative 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 answer
- Evaluation:
 - Students were very eager to solve clues
 - Students didn't understand coordinates as much as hoped
 - The problems given were effective revision for the children - "We had to do really difficult maths that we learnt ages ago"
 - Sacrificed 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
- 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

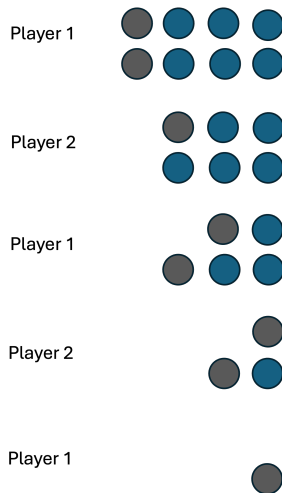


Figure: Example game of Nim

Session 6: Talking about maths confidence

- While lesson structures, content and materials can all affect maths confidence

- Increasing maths confidence
 - Noticable 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