Exploring maths attitudes: An account of practice from collaborative action research in Valentine Primary School

The Research-Practice Partnership

The **School Voices Research-Practice Partnership** aims to support schools in **responding to student diversity** and **improving learning outcomes** for **all**, whilst at the same time **promoting inclusion**. This will be achieved by focusing on **students' voices and dialogues** between teachers and children and young people through **participatory research approaches**.

The Partnership has been partly funded by **UKRI – Higher Education Innovation Funding (HEIF)**. The Partnership consists of a collaboration between: **University of Southampton** and three **hub schools (St John's Primary and Nursery School, St Mary's CE Primary School, Redbridge Primary School)** that were involved in an earlier pilot study. The hub schools and the University of Southampton support other schools in introducing these ideas through collaborative action research, considering the complexities within each school context. For more information - www.schoolvoices.soton.ac.uk

The school

Valentine is a three-form entry primary school in the Sholing area of Southampton. It has 511 students aged between 4 and 11, three members in the Senior Management Team, 28 teachers, 30 teaching assistants and 9 non-classroom support staff. Valentine's community is predominantly White British, with 8.5% of students speaking English as an Additional Language (EAL). 46% of the students are eligible for Pupil Premium (PP).

Since 2023, the school is part of a cluster of three schools with St. Mary's and Mason Moor Primary. The school's mission is to ensure each student's character, emotional, and social development, regardless of context and background.

Valentine's values are expressed through the '***I DREAM***' acronym:
Independent - Being lifelong independent learners
Determined - Being determined and resilient
Reflective - Being able to learn from experiences
Enquiring - Being curious learners
Ambitious - Cultivating ambition
Motivated - Being driven to overcome setbacks

Research focus and process

The project explored pupils' attitudes towards learning mathematics across the school.

Research questions included:

- **Is maths an enjoyable subject?**

- **What barriers are there to enjoying mathematics?**
- **How can maths be improved to make it more enjoyable?**
- **Which parts of the curriculum might cause negativity towards maths?**

The aim was to understand what pupils really think about their learning, how they feel about their lessons and what could help them learn better in maths. By focusing on pupils' honest views, the research sought to identify changes that would make a real difference to their experience.

The idea for the project came from the school's development plan. Although senior leaders had previously gathered pupil voice, they often found that children tended to say what they thought adults wanted to hear. As a result, the 'true' reasons behind pupils' attitudes towards maths were not always clear.

This research aimed to gain a deeper understanding of the specific barriers children faced in Maths. An exploration of whether these linked to confidence, the way lessons were taught, or curriculum content was carried out with the aim being identifying ways to address these challenges. At the same time, the project aimed to highlight what was working well for pupils who enjoyed maths, with the goal of strengthening and expanding these successful approaches throughout the school.

Participatory methods

This project was designed to gather pupils' honest views about learning mathematics, placing children at the centre of the process. Working alongside school staff, 'Pupil Voice Champions' led much of the data collection, helping to create a safe and open space for peers to share their thoughts. Some of the methods used were:

Peer-led interviews: Pupil Voice Champions and senior leaders visited classrooms across the school to interview children about their experiences of maths. The interviews combined yes/no questions with open prompts, giving pupils the chance to explain their answers in more detail and leaving the pupils space to unpick them. Because the interviews were conducted by fellow pupils, younger children often felt more comfortable and willing to speak honestly.

Class-based surveys: Surveys were used to gather views from larger groups of pupils at the same time. This approach captured a wide range of perspectives and provided a broad picture of how maths was experienced across different year groups.

Follow-up discussions: After collecting initial responses, pupil researchers explored certain answers in greater depth through informal conversations with students. These follow-ups helped uncover the reasons behind both positive and negative attitudes to maths.

Outcomes

Identifying barriers to enjoying maths: Pupils highlighted that having too many strategies was confusing instead of facilitating the learning of maths, as the approaches usually were too broad, and they weren't sure which strategies to apply and when. This confusion impacted their ability to focus and feel confident during lessons, and what they were learning/capturing during those. This insight was new to many teachers, highlighting a gap in understanding pupil experience that was crucial for further changes.

Concrete changes in teaching practice led to pupil engagement with maths: In response, teachers reduced the number of strategies taught and introduced more practical, hands-on activities. These changes aimed to make lessons clearer, more engaging, and better suited to pupils' learning preferences. Following these adjustments, pupils reported feeling more motivated and confident in maths. This was reflected in their increased participation and willingness to tackle mathematical challenges.

Development of leadership skills and empowerment among Pupil Voice Champions: The pupils who were directly involved in the process developed stronger leadership skills and confidence. They experienced firsthand how their contributions could influence teaching practices and school policy, motivating a sense of ownership over their learning environment.

Integration of pupils' voices into school improvement planning: Senior leaders are committed to using the insights gained from the project to shape future plans for maths teaching. This included refining curriculum approaches at Valentine but also across the wider partnership of schools, seeking to impact broader aspects of the research findings.

Key ideas emerging

Meaningful and Contextualised Activities: Participatory activities enhance engagement and understanding, but their impact depends on being meaningful and tailored to pupils' interests and needs. Simply increasing the number of activities without relevance does not guarantee better learning.

Simplifying learning strategies to shift attitudes towards maths: Pupils benefit from focusing on fewer, well-explained strategies. This clarity reduces confusion and helps build their confidence and ability to apply maths in and outside the school. With thoughtful changes in teaching practices, pupils' feelings about maths can change from anxiety or disinterest to curiosity and enthusiasm.

Teachers' and Students' thoughts

From this project, the outcomes were really good. Teachers changed the way they taught some lessons, especially in maths, to help us feel more confident. The project also helped us champions to build our confidence and leadership skills. Overall, it helped the whole school because children felt listened to and teachers learned what pupils really think and why.

Pupil researcher

I think it's quite exciting because lots of people when they hear maths, they might go 'Oh, maths.' But now maybe if we make those changes, make it more exciting, more fun, more activities, when people hear maths they might go, 'Oh, yeah, I wonder what we're going to do today.'

Pupil researcher

So our next step is that we, as a senior leadership team, look at what our plan is to develop the school for the upcoming academic year. So this is the time where we'll incorporate that pupil voice into how we want to improve and refine mathematics teaching across our school, but also in the wider partnership of schools.

SEND Coordinator

Teacher team

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Research team

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We would also like to acknowledge the participation of many children and other staff in the school who have contributed in various ways.