

Masters in Educational Practice (MEP)

Teacher Inquiry Portfolio



Llywodraeth Cymru
Welsh Government

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The MEP inquiry projects are based on classroom practice and it's hoped they will inform current practice for all in the education sector and potentially identify areas for further research. All projects have been quality assured by the alliance members and we believe these projects deserve dissemination to as wide an audience as possible.

Alliance Members:



To what extent can the implementation of group work enhance pupils' ability to tackle numerical reasoning questions?

Miss S Bell. Masters in Educational Practice.

Introduction

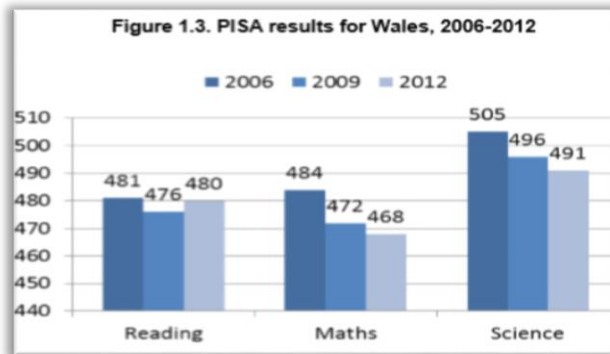
This inquiry investigated the impact of implementing group work tasks in the mathematics classroom on the academic and social outcomes for a group of learners. My aim was to develop a pupil-centred learning environment and enhance pupil resilience through delivering high quality, rich tasks and facilitating opportunities for social interaction with a focus on numerical reasoning and problem solving.

As teachers, ***"we need to ensure that everyone is aware of the importance and relevance of numeracy as a skill. Being numerate adds value to a person's earning power, and a nation of numerate people will add value to the Welsh economy,"*** (Welsh Government, 2012, p.3)

Justification

Welsh Government documentation and PISA findings show that numeracy standards in Wales are below expectations.

- In 2012 Welsh students' performance in mathematics was significantly below England, Scotland and N.Ireland and the OECD average and has declined since 2006.

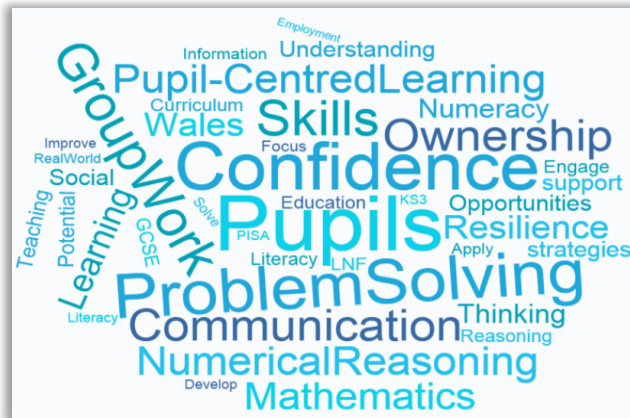


Therefore, now more than ever, there is a need for the development of high quality teaching and learning strategies for numeracy throughout KS3 and KS4, if pupils are to be given the best opportunities to feel confident with this skill and excel in the new Numeracy GCSE and in life post-education.

Inquiry Design

My intervention was carried out over a four week period with a top set year 8 mathematics class. Pre-planned group work tasks with a focus on real-life numerical reasoning were implemented to compliment the scheme of work and promote opportunities for pupils to take ownership of their learning, work effectively together to solve mathematical problems and develop numerical reasoning skills.

An action research design was used to conduct this inquiry through collecting a range of data using various methods, including statistical test results, classroom observation, a reflective journal and importantly, pupil voice.



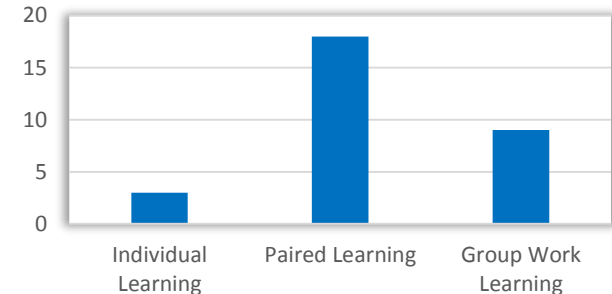
Inquiry Findings

Several key findings from the data analysis were discovered:

- Group work contributed to **increased confidence levels** in mathematics and problem solving.
- **High levels of pupil ownership and engagement** were observed.
- Pupils generally perceived group work to be beneficial for learning and **development of communication skills**.
- Group work impacted positively on **supporting pupils to break down 'wordy' problems and understand the literacy content of the question**.

- However, interestingly, pupil voice suggested working in smaller groups of 3 or 4 compared to larger groups of 5+ was more productive for problem solving and 60% of pupils expressed their preference for paired work in mathematics.

A graph to show pupils' preferred learning situation



Conclusion

When managed effectively group work can be an successful strategy to enhance numerical reasoning and engage pupils in problem solving and has several holistic benefits for learners.

However, it is imperative that teachers use a variety of strategies and learning situations to support pupils through the challenge of developing this skill.

As teachers we need to continue striving to provide all pupils with high quality opportunities to engage with and achieve in numeracy in school and in everyday life.

Key References

- Galton, M., Hargreaves, L. and Pell, T. 2009. Group work and whole-class teaching with 11- to 14-year-olds. *Cambridge Journal of Education*, 39(1), pp.119-140.
- National Numeracy. 2015. National Numeracy for everyone, for life. Available from: <http://www.nationalnumeracy.org.uk/> [Accessed on 5/05/15].
- OECD. 2014. Improving schools in Wales: An OECD Perspective. Paris.