



CASE STUDY REPORT

Raising attainment of girls in mathematics at the end of Key Stage 2

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This study was originally published in 2009 as part of the 'What Works Well' initiative, part of the National Strategies for Education in England.

Abstract

Background: The purpose of the study was to improve the attainment and confidence of girls in mathematics by encouraging them to discuss and reason in a social context, become actively involved in their own learning, and have positive attitudes towards mathematics.

Aims: The main aim was to raise the attainment and confidence of girls in mathematics by encouraging them to discuss and reason in a social context, become actively involved in their own learning, and have positive attitudes towards the subject.

Methods: The participants included head of school improvement, headteacher, middle leader, National Strategies consultant, senior leadership team, SIP, subject leader, and teacher. Methods used to impact pupil learning included CPD sessions on developing problem solving and investigations, modelling in demonstration maths lessons, developing assessment for learning strategies, and encouraging girls to discuss and reason in a social context.

Findings: The main findings are that girls' achievement at the end of key stage 2 was raised by an average of 8% across 5 schools, and teachers developed a greater understanding and application of pedagogical skills, particularly the importance of a collaborative classroom.

Implications: The findings suggest that implementing assessment for learning strategies, talk partners, and problem solving can help raise the attainment and confidence of girls in mathematics.

This abstract was generated by Camtree using a large language model (LLM) and added to the original report in 2023.

Keywords: Primary education; Mathematics

Introduction

What were your reasons for doing this type of development work?

There is a disparity between the attainment of girls and boys at the end of key stage 2 across the LA in Mathematics at level 4 and especially level 5. Research from gender and achievement provided the focus for the action points.

In 2005 in mathematics end of Key Stage 2 level 4+ girls achieved 77% and boys 80% but at level 5 girls attained 30% and boys 35%.

In 2006 in mathematics end of Key Stage 2 level 4+ girls achieved 78% and boys 80% but at level 5 girls attained 30% and boys 38%.

In 2007 in mathematics end of Key Stage 2 level 4+ girls achieved 79% and boys 81% but at level 5 girls attained 29% and boys 37%.

Who might find this case study useful?

- Head of school improvement
- Headteacher
- Middle leader
- National Strategies consultant
- Senior leadership team (SLT)
- SIP (School Improvement Partner)
- Subject leader
- Teacher

Description

What specific curriculum area, subject or aspect did you intend to have impact on?

- Mathematics

How did you intend to impact on pupil learning?

Develop girls' confidence and understanding in mathematics by encouraging them to discuss and reason in a social context. Encouraging girls to become actively involved in their own learning and have positive attitudes to mathematics.

What were your success criteria?

- Girls able to discuss confidently and successfully with a maths partner
- All pupils able to consider and answer questions
- Girls more assertive in maths lessons
- Girls able to formulate their own questions and thereby interpret other maths problems
- Pupils able to apply maths across the curriculum.

What information or data did you use to measure progress towards your success criteria?

- Test results

Describe the CPD approaches you used

- Staff meeting to introduce action plan and for teachers to reflect on implications to improve teaching and learning in their classrooms
- Developing assessment for learning strategies in the classroom
- CPD sessions on developing problem solving and investigations with pupils
- Modelling in demonstration maths lessons

What CPD materials, research or expertise have you drawn on?

LA problem solving resources for girls

Who provided you with support?

- External agency

How were you supported?

consultant support

Impact

What has been the overall impact on pupil learning?

- Girls were observed as being active participants in maths lessons
- Girls were more confident in asking and answering questions
- Girls were more able to take risks and tackle problems
- Girls' achievement at the end of key stage 2 was raised by an average of 8% in the 5 schools. However boys attainment was also raised significantly.

Quotes you think are relevant to overall impact on learning

Pupils quotes on use of talk partners:

- Someone your own age can help you understand things better.
- It's a chance to ask questions.
- It's a chance to share ideas.
- You're in front of one person, not the whole class.
- You can talk to them before you go to the teacher.
- Working with different people is good because everyone's mind works differently.
- Your partner can help you unpick a problem.

Quantitative evidence of impact on pupil learning

- Test results

Qualitative evidence of impact on pupil learning

- Logs or interviews
- Observation outcomes

Describe the evidence of impact on pupil learning

Girls' achievement at the end of key stage 2 was raised by an average of 8% across the 5 schools.

What has been the impact on teaching?

Teachers developed a greater understanding and application of pedagogical skills and in particular the importance of a collaborative classroom.

Evidence of impact on teaching

- Evidence from observation and monitoring
- Teacher perceptions

Describe the evidence of impact on teaching

Teachers able to evaluate the strategies used and apply these to other areas of the curriculum.

What has been the impact on school organisation and leadership?

Shared understanding and action plan to tackle underachievement in mathematics.

Evidence of impact on school organisation and leadership

Inclusion of actions in school improvement plan.

Summary

What is the crucial thing that made the difference?

Assessment for learning strategies

What key resources would people who want to learn from your experience need access to?

- Gender and achievement research
- Mathematical challenges for more able pupils
- Unlocking formative assessment in the primary classroom
- LA problem solving resources for girls

What CPD session and resources were particularly useful?

- Assessment for learning
- Problem solving

If another individual or school was attempting to replicate this work, where would they start and what would the essential elements be?

Look at data and identify low attaining group. Develop the use of talk partners and problem solving. Action plan is attached under documents.

What further developments are you planning to do (or would you like to see others do)?

Establish a network of schools to develop and promote strategies to raise the attainment and confidence of girls maths.

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About 'What Works Well'

This case study was originally published as part of the 'What Works Well' section of the National Strategies for Education in England. The National Strategies were professional programmes aiming for improvements in the quality of learning and teaching in schools in England. 'What Works Well' involved teaching practitioners from all phases and areas of education sharing accounts of real developments which had improved learning and teaching, and made a difference to pupil progress. 'What Works Well' case studies were designed to support practice transfer and include sufficient detail and resources to enable others to implement the effective practice described. They were reviewed by experts prior to publication as 'User Generated Content' (UGC) under a licence which encouraged reuse and derivative works, but which precluded commercial use.

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