

Improving reasoning and language in mathematics, using guided group work – implementing collaborative, classroom-focused CPD (Years 1, 3 and 5)

DAY 2	Learning and teaching in mathematics
	<p>Improving reasoning and language in mathematics, using guided group work</p> <p>Aims of session</p> <ul style="list-style-type: none">• To develop strategies for improving children's reasoning and language• To consider learning contexts and how to choose the most effective pedagogical approach for different purposes• To develop understanding of contexts for using observation to support day-to day assessment <p>Contrast teaching of the whole class with guided group work</p> <p>Explain that the session will explore the further development of quality-first mathematics teaching and provide opportunities to extend children's reasoning and use of language. This will be achieved by developing a classroom example that will move from an overarching main teaching session to guided group work.</p> <p>Introduce the example activity (outlined in structured example 1, 2 or 3), which uses a practical approach to developing children's understanding of the structure of number. Develop the whole-class aspect through demonstration and questioning, structuring questioning and dialogue to deepen reasoning.</p> <p>Ask staff to:</p> <ul style="list-style-type: none">• reflect on the activity and process, drawing out the quality of dialogue, reasoning, etc.;• consider how they might do this with their class;• review the contexts that would ensure success. <p>Follow this up by discussing when and why these activities would be part of a mathematics lesson. Concentrate on contexts such as:</p> <ul style="list-style-type: none">• whole class;• individual;• pairs or small collaborative groups (independent);• small groups (guided).

	<p>Guided group work in mathematics</p> <p>Draw on staff's experiences of planning and conducting guided group work. Pull out key features and record. Ensure the discussion draws out features such as:</p> <ul style="list-style-type: none">• careful identification of needs of the group through ongoing assessment for learning before planning guided session;• interaction and sustained discussion as opposed to single questions and moving on;• role of the teacher in teaching and scaffolding;• opportunities for diagnosis of barriers to progress;• developing use of mathematical language;• teaching a specific skill;• teaching a calculation strategy;• promoting and scaffolding reasoning and enquiry skills;• improving an aspect of children's using and applying skills;• taking the opportunity to provide enrichment;• addressing any lack of knowledge or area of misunderstanding. <p>Illustrate in some detail one guided group example. Provide others as short examples of guided sessions for staff to draw upon outside the CPD session. These could be drawn from the classroom examples provided:</p> <ul style="list-style-type: none">• <i>Using and applying mathematics</i> – helping children work collaboratively and develop speaking and listening skills (Year 5 calculation)• <i>Intervention</i> – accelerating pupil progress, linking to level 3 to 4 CD (Year 5 number)• <i>Intervention</i> – more-able children, extension and support (Year 1 number)• <i>Intervention for children with English as an Additional Language</i> – pre-teaching/developing language (Year 3 number concepts). <p>Refer staff to the prompt sheet to support planning of guided group work. Explain that the sheet contains questions to be considered when teachers are developing guided sessions. Explore and then give time to review and discuss possible changes to existing practice.</p>
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	<p>Key messages</p> <p>Bring the session to a conclusion by highlighting some key messages.</p> <ul style="list-style-type: none">• The teacher needs to make decisions about the most appropriate pedagogical approach for given intended outcomes.• Effective guided group work builds upon assessment and provides an opportunity to target teaching at an appropriate level.• Guided group work provides an opportunity to probe and assess children's understanding, and is part of the entitlement to quality-first teaching for every child.• Guided group work must respond to learning needs and it is unlikely that it can be planned very far in advance.• Practical and ICT-based resources, models and images can have a key role to play in guided group work in mathematics. <p>Adopting a collaborative lesson-study approach</p> <p>Aims of session</p> <ul style="list-style-type: none">• To review three models of CPD and discuss their impact on children's learning• To develop a greater understanding of the lesson-study approach to collaborative CPD <p>Review of collaboration from interim task</p> <p>Review the three models of CPD shared with headteachers and available within the <i>Leading improvement using the Primary Framework</i> materials: peer coaching, lesson study and action enquiry. Relate these to the collaboration carried out by staff within their own schools as a result of previous CPD focused upon number concepts or informal calculation.</p> <p>Ask for feedback about what worked well, especially changes in classroom practice. Discuss barriers experienced and how they could be overcome.</p> <p>Developing a lesson-study approach</p> <p>Explain that one of the elements of this session will be to see how a collaborative approach to CPD might be used to consider how different pedagogies, such as guided group work in mathematics, impact on children's learning in the classroom. Emphasise that the focus in the session will be on lesson study and how it might be used to improve children's learning and the teaching of mathematics.</p> <p>Remind staff that lesson study involves rigorous and ongoing assessment of a small focus group of children who provide a study</p>
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	<p>group for the duration of the collaborative activity.</p> <p>Model step-by-step lesson study, based upon one of the children studied during the AfL focus of the morning session, and their identified weakness.</p> <p>Share the step-by-step mathematics example. Explain that at each stage the role of the headteacher and subject leader in providing support for the collaborative lesson-study group who are carrying out the classroom-focused CPD has been identified.</p> <p>Provide blank copies of the step-by-step guide. Support staff to begin to plan their collaborative lesson-study approach.</p>
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