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EARLY YEARS STRONGER PRACTICE HUB
Supporting & Empowering Early Years

Blog

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Meta Maths Matters

'Amanda, I know what metacognition skills I used in my maths challenge'.

A clear and confident assertion by an enthusiastic 4 year old, which qualified the application of metacognition to the teaching of maths, that had been implemented over the course of several terms.

META MATHS AND WHY IT MATTERS

My name is Amanda Hubball.I am the Deputy Head and Maths Lead at Alfreton Nursery School. In our school, we've long championed a creative and metacognitive approach to maths. With 28 years experience rooted in nursery education, I've seen first-hand how young children thrive when they're supported to think about their thinking. That's why we took the decision to fuse explicit problem-solving teaching with metacognitive strategies. We found that when our children learn how to learn, they become confident, independent mathematicians.

Evidence from the Education Endowment Foundation (EEF) suggests that "the approach of teaching problem-solving skills can have a positive impact on children's early mathematics". This is more likely to be effective when children are taught to plan, monitor, and evaluate their learning, which are core components of metacognition.

HOW DOES METACOGNITION BUILD RESILIENCE?

The EEF's guidance on metacognition and self-regulated learning highlights that these strategies can lead to +7 months of additional progress, particularly for disadvantaged pupils. In our setting, we've seen children grow in confidence as they learn to reflect on their problem-solving journey.

Comments like "I know how I did that" and "you need to use your brain to connect" show that even our youngest learners are developing metacognitive awareness. Within our school we find that children are more likely to be effective metacognitive learners when they are given time and space to articulate their thinking, either verbally or visually.

WHAT DOES META MATHS LOOK LIKE IN PRACTICE?

We start with a question. This first step supports children to plan their approach, choose resources, and monitor their progress. As they add, subtract, compare, and describe, they use symbols to represent their thinking strategies. For example, when they connect ideas or manipulatives together, they can exemplify this with an image of a chain link. These symbols act as bridges between abstract ideas and concrete understanding.

“Research does indicate that breaking tasks down into small steps can be effective” (EEF. Approaches and Practices to supporting early mathematics), and that’s what we try to do. By chunking the problem-solving process, we give children the best chance of success.

For children who are reluctant or unable to verbalise their thinking, creating a visual mathematical story offers an inclusive alternative. We have found that this is more likely to be effective when children are encouraged to share their strategies with peers, fostering collaboration and deeper understanding.

WHAT'S THE IMPACT?

The final step in our Meta Maths process is recall. Children revisit their thinking process, identify what worked, and reflect on any obstacles. This transparent approach to learning supports secure problem-solving skills and a deeper level of mathematical understanding.

The EEF blog by Kirstin Mulholland notes that “metacognition is a powerful tool to support children’s planning, monitoring and evaluating within the process of problem solving”. In our setting, we’ve seen this manifest daily—with children becoming more strategic, resilient, and reflective.

WHAT SHOULD PRACTITIONERS DO NEXT?

If you’re looking to deepen mathematical understanding in your setting, you could consider embedding metacognitive strategies into your problem-solving sessions. Model the thinking process, use visual supports, and encourage children to explain their strategies.

Let’s make thinking visible. Try introducing symbols to represent thinking approaches, and give children time to reflect on their problem-solving journey. By doing so, we’re not just teaching maths—we’re nurturing lifelong learners.

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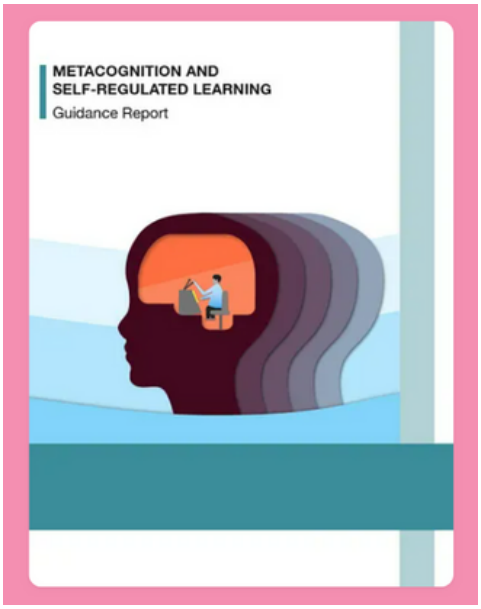

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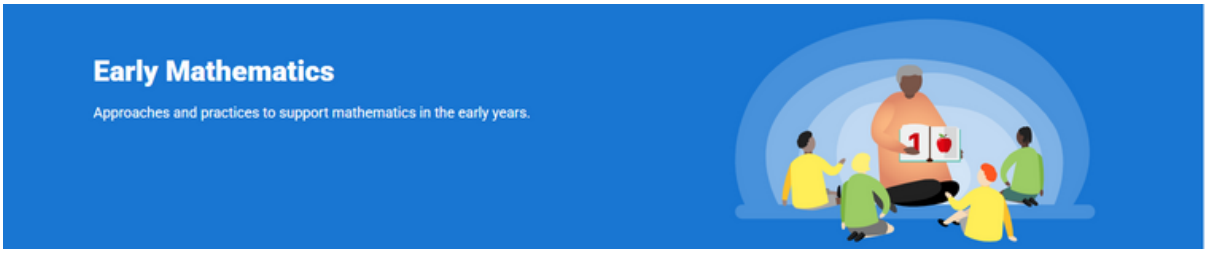

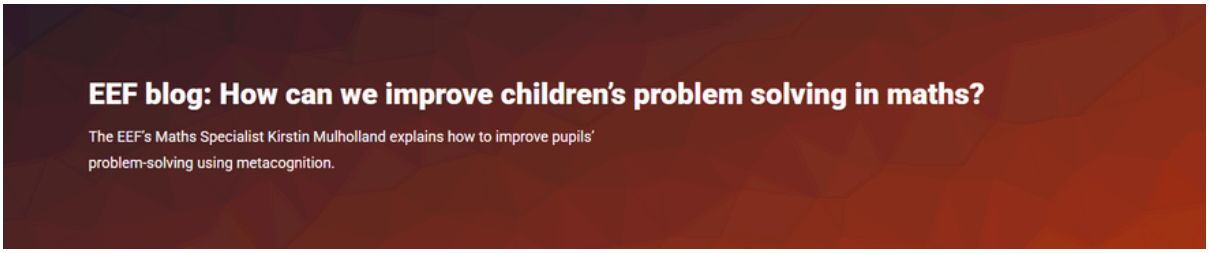

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