

What Really Drives Students' Mathematical Reasoning Growth - And It Isn't More Maths

When Literacy Lifts Maths

LONDON, UNITED KINGDOM, July 1, 2026 /EINPresswire.com/ -- Independent research from Boston College has uncovered something that should reshape how we think about maths education: the most powerful driver of mathematical reasoning growth in Key Stage 3 students isn't more maths. It's language.

The research followed 103 Years 6-8 students in a large urban school district, measuring growth across three points in time. What the data revealed was not simply that students improved. It revealed the sequence by which that improvement happened - and that sequence tells a story that every educator and school leader should pay attention to.

Language moved first. When it did, the ability to reason mathematically followed. And when reasoning was strong enough, the ability to analyse and identify patterns emerged. All three grew together - significantly, measurably, and for every student regardless of where they started.

THE SEQUENCE THAT CHANGES EVERYTHING

Most maths interventions ask a straightforward question: did scores go up? This research asked a different and more important question: in what order does mathematical thinking actually develop - and what drives it?

The answer was consistent across the entire cohort. Literacy was the single strongest predictor of mathematical reasoning growth - five times more strongly than mathematical reasoning predicted literacy growth. This wasn't a correlation. The longitudinal modelling tested directionality across multiple time points, and the direction was clear: language came first in the learning sequence and pulled mathematical reasoning up behind it. Critically, this held for every student. Those who entered with stronger literacy developed mathematical reasoning fastest. But those who entered with weaker literacy didn't fall behind - they grew too. The learning environment itself developed their language skills alongside their mathematical thinking, which in turn drove their reasoning growth. No student was left behind by their starting point.

THE FINDINGS

1. Language came first - Literacy was the single strongest predictor of math gains - five times more strongly than the reverse.

2. Reasoning followed - the ability to reason built first, then consistently scaffolded the ability to analyse, which surged in the second half of the study.

3. All students grew - every student grew their literacy skills, ability to reason and ability to analyse - regardless of starting point.

Growth held across all engagement levels, making the findings robust to the variable attendance patterns that characterise many urban learning environments

WHY THIS MATTERS NOW

The DfE's Curriculum and Assessment Review places oracy at the heart of its reform agenda - the ability of students to reason, discuss, and communicate as a foundation for deeper learning. While this study measured academic literacy broadly - reading comprehension, vocabulary, and written reasoning in a mathematical context - the findings speak directly to that agenda. Language-rich environments produce measurable, longitudinal gains in mathematical reasoning. The developmental mechanism the CAR is seeking to build through oracy investment is precisely what this research documents.

It is not a coincidence that a language-rich mathematics environment produces stronger mathematical reasoning. Language is the mechanism. When students engage with mathematical ideas through real-world, scenario-based challenges, they are activating the developmental sequence that the research shows mathematical reasoning actually requires. This study does not claim to have measured oracy directly - but it provides the first independent longitudinal evidence of how language-rich learning environments drive mathematical growth, and that is exactly the evidence base the reform agenda needs.

This research provides the first independent longitudinal evidence of precisely how that sequence works - and why it matters for every student, regardless of starting point. For those designing the next generation of post-16 qualifications and assessment frameworks, it offers something rare: a rigorous, evidence-based account of the conditions under which mathematical thinking develops.

The urgency is real. At a moment when the maths attainment gap demands fresh thinking and the resit crisis demands a credible alternative to exam repetition, the question is no longer only what we teach. It is what conditions we create - and in what sequence - for mathematical thinking to develop in every student.

ABOUT THE RESEARCH

The analysis was conducted by Elizabeth Olson and Dr. Emma Klugman of Boston College's Lynch School of Education and Human Development as an independent M.S. Data Science capstone, completed in 2026. Methods included Cross-Lagged Panel Modelling, Structural Equation Modelling, Latent Growth Curve analysis, and Robust Maximum Likelihood estimation

across a matched three-wave cohort of 103 Years 6-8 students in a large urban school district. All modelling decisions, statistical specifications, and interpretations are the researchers' own.

To request a copy of the full white paper, When Literacy Lifts Maths, please email uk@mindsets.com

ABOUT MINDSETS EDUCATION

At Mindsets Education, we design and assess evidence-based mathematics programming that aligns with the aims of the National Curriculum to build reasoning, analysis, and literacy as a connected developmental system.

Students engage with mathematical ideas through real-world, scenario-based challenges and projects, and are encouraged to collaborate and engage in rich classroom discussion. The Boston College study documented in this release is the first independent evidence of how that developmental sequence - language first, reasoning and analysis following - unfolds in practice.

The skills students develop - reasoning, analysis, literacy, and collaboration - are the core skills that prepare them for the demands of secondary education and beyond. School leaders and Multi-Academy Trusts interested in learning more about how this approach could work for their students are invited to reach out.

Contacts - Mindsets Education

Dr. Aubrey Escobar - Chief Education Officer · aubrey@mindsets.com

Marissa Di Pasquale - CEO · marissa@mindsets.com

Marissa Di Pasquale

Mindsets Education

[email us here](#)

This press release can be viewed online at: <https://www.einpresswire.com/article/923625403>

EIN Presswire's priority is source transparency. We do not allow opaque clients, and our editors try to be careful about weeding out false and misleading content. As a user, if you see something we have missed, please do bring it to our attention. Your help is welcome. EIN Presswire, Everyone's Internet News Presswire™, tries to define some of the boundaries that are reasonable in today's world. Please see our Editorial Guidelines for more information.

© 1995-2026 Newsmatics Inc. All Right Reserved.