Title: Elevating Effective Mathematics Teaching Strategies to Support Executive Function Skills via Equity Approaches
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Session Overview

In this professional development presentation for The Center for Transformative Teaching and Learning's Science of Teaching and School Leadership Academy, EF+Math team members Kai Ivory and Megan Brunner present evidence of the promising role of executive function in improving mathematics learning outcomes and provide teacher strategies for supporting executive function skills in mathematics learning.

This session aims to provide mathematics teachers with a deeper understanding of executive function (EF) skills within the mathematics content and classrooms. We will explore the core hypothesis of the EF+Math program: understanding the role of EFs in student learning, with a focus on supporting Black and Latinx students and students of all races experiencing poverty. This session provides an overview of how six R&D project teams from the EF+Math portfolio are exploring the core hypothesis in their own approaches, including structure of classroom activities, grade level and content, and how they are strengthening and engaging EFs.

Then, the presenters provide three sets of instructional strategies that build on effective mathematics teaching practices recommended by the National Council of Teachers of Mathematics. The strategies (scaffolding, using complex tasks, and leveraging games and play) are each aligned with a facet of EFs: working memory, inhibitory control, and cognitive flexibility, to focus the discussion. Each strategy is also explicitly connected to student agency and equitable learning opportunities, and the presenters share how strengthening executive function skills can support educators in making more equitable teaching decisions.

The presentation closes with breakout room discussions for participants to more deeply discuss a strategy that resonated with their current teaching goals.

Key Takeaways:

- All students have - and use - EFs in their daily lives.
- Engaging EF skills provides students pathways to have agency over their learning.
- Teaching that supports EF development and equitable learning requires intention and inquiry.
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Participant Learning Outcomes

Participants will leave this session with a set of instructional practices that are grounded in learning science research and evidence of implementation from teams across the EF+Math Program. These instructional practices will extend the participants' current practice and provide tangible connections to supporting EFs in math contexts. Throughout the session, participants

will have opportunities to share their current practices with colleagues and the presenters. We engage as small and whole groups to dig into specific practices, consider how they align with teacher's goals and current content, and brainstorm possible next action steps for implementing activities and practices that focus on EFs in their mathematics classrooms.

This session is intended for mathematics educators in grades 3-8.

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