

Powering up preschool educators and families in early science through community partnerships

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Introduction

- High-quality science experiences in the early years lay a foundation for later academic learning and achievement.
- Science can motivate all children, including multilingual learners (MLs), to use oral language and emergent literacy skills (Shanahan & Shea, 2012).
- When children's exploratory play and inquiry is guided by nurturing, engaged adults, it can fuel development of STEM skills including critical thinking, collaboration, communication, and creative problem-solving (Allen & Kelly, 2015).
- Science fosters children's self-efficacy and positive attitudes toward doing and learning science (Whitebread et al., 2017).



Purpose

This program, **Supporting Science Inquiry, Interest and STEM Thinking for Young Dual Language Learners (SISTEM)** was developed to support language-enriched science experiences that fuel ALL children's science inquiry, interest, and STEM thinking with a specific focus on supporting MLs. Program components included:

- 3 full day Inquiry Professional Learning days
- Professional learning communities focused on implementation and family engagement
- Teacher-Parent Workshops
- Home and classroom materials and resources
- Family STEM Events at the CT Science Center
- Connections to local STEM-industry professionals

Research Questions

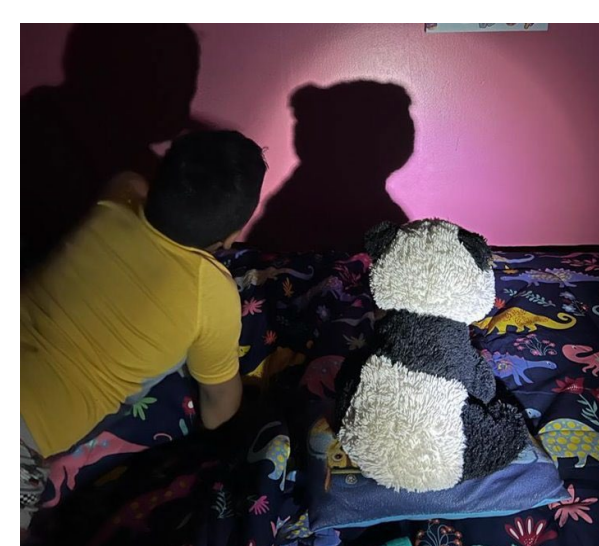
Is SISTEM participation associated with:

- PreK teachers' self-efficacy in teaching science?
- PreK families' understanding of the importance of their children's science learning and awareness of STEM careers?
- PreK families' confidence engaging their children in science and working with their child's teacher to support their learning?

Research Design

Case study mixed methods, including:

- Surveys
- Interviews
- Focus groups
- Video observations



SISTEM's Cross-Context Approach



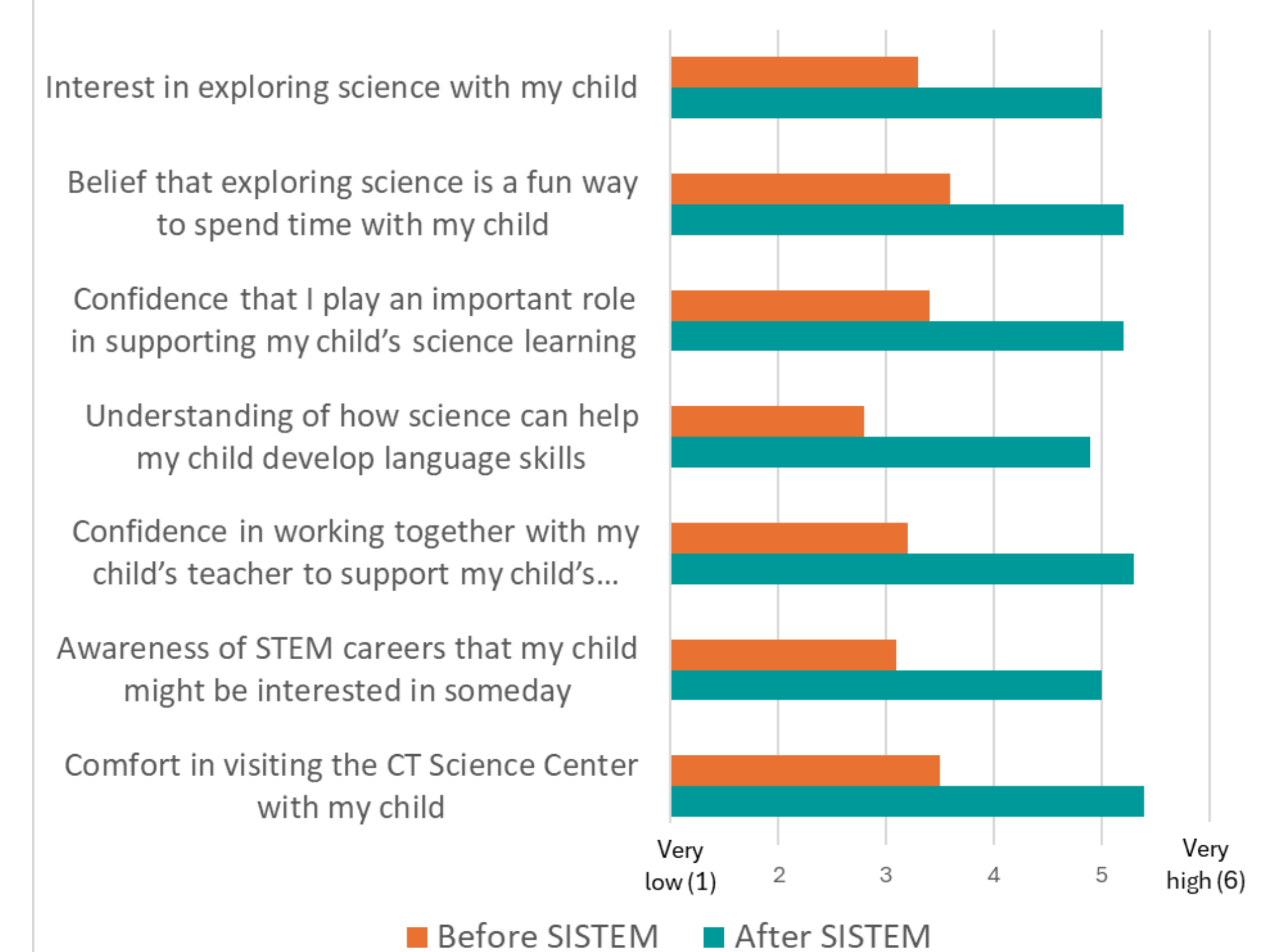
What do families say?



"I love how the teacher shared about the science children were doing at school, because then I could explore some of the same things with him at home and send her [the teacher] pictures too."

"I am closer to the teacher just because of all those workshops and the times where I would go to the science center and her teacher would be there as well."

Parent Ratings of Program Effects



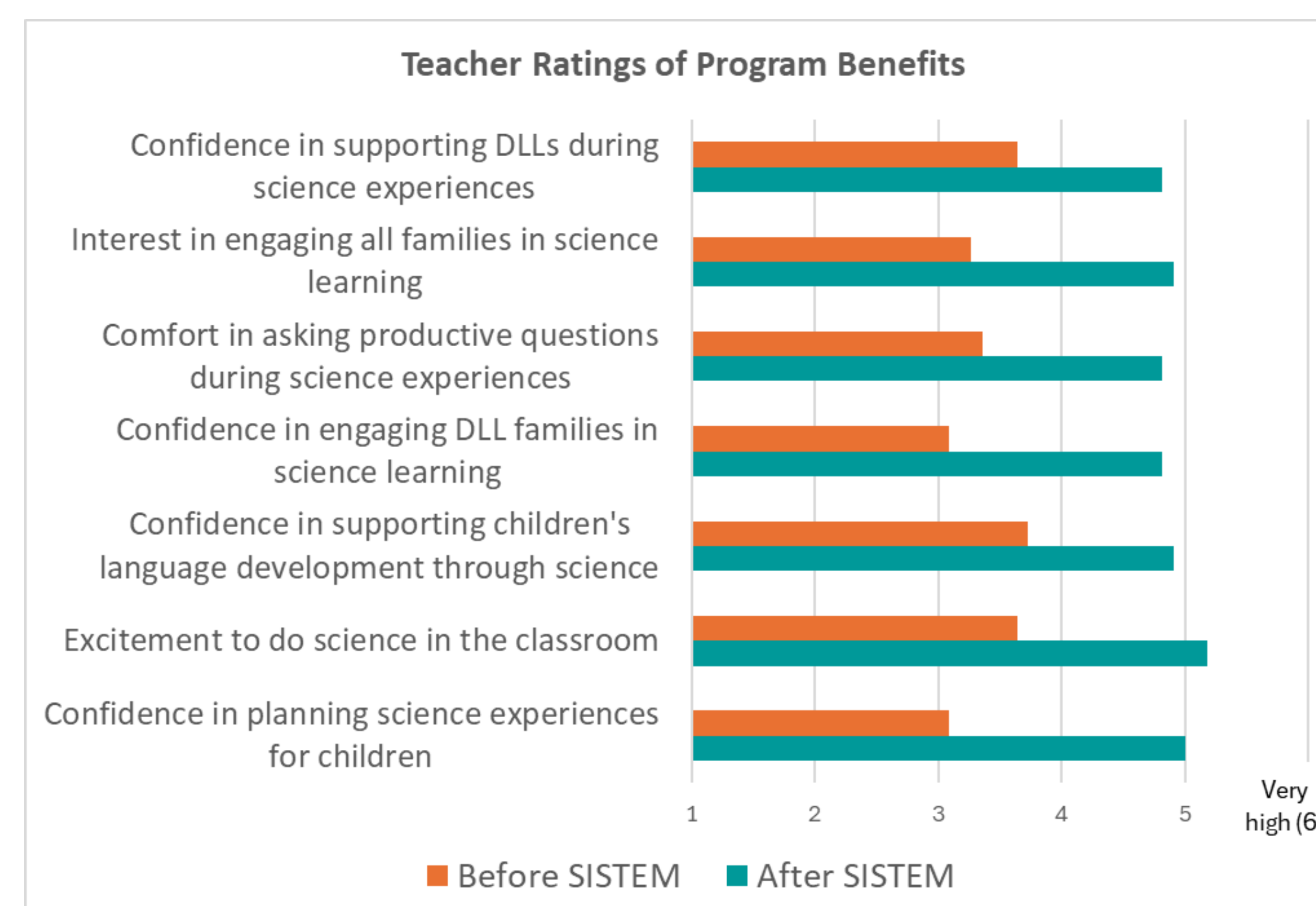
Recommendations for Supporting MLs' Inquiry

- Facilitate rich and authentic science learning experiences for young MLs, their families, and teachers.
- Provide resources that inspire science inquiry at home, at school, and in informal science spaces.
- Bring teachers and primary caregivers together for reciprocal sharing and learning, and to plan rich and connected science experiences for MLs' across contexts.
- Promote on-going support for teachers through a virtual professional learning community. (PLC).
- Leverage innovative technologies in English and children's home languages to bridge home and school.
- Create a STEM community helpers model by partnering with local STEM professionals and organizations.
- Introduce children and their primary adults to authentic and relatable STEM role models to broaden their awareness of what science is and who does it.

References

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What do teachers say?



"This approach has allowed me to meet the needs of all of the children in my classroom. Most of the learning goals in math, cognition, language/literacy, fine motor development and even the creative arts can be supported in a dynamic and interactive way. The children are so engaged and seeing them apply their skills as they investigate these topics has been so exciting."



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