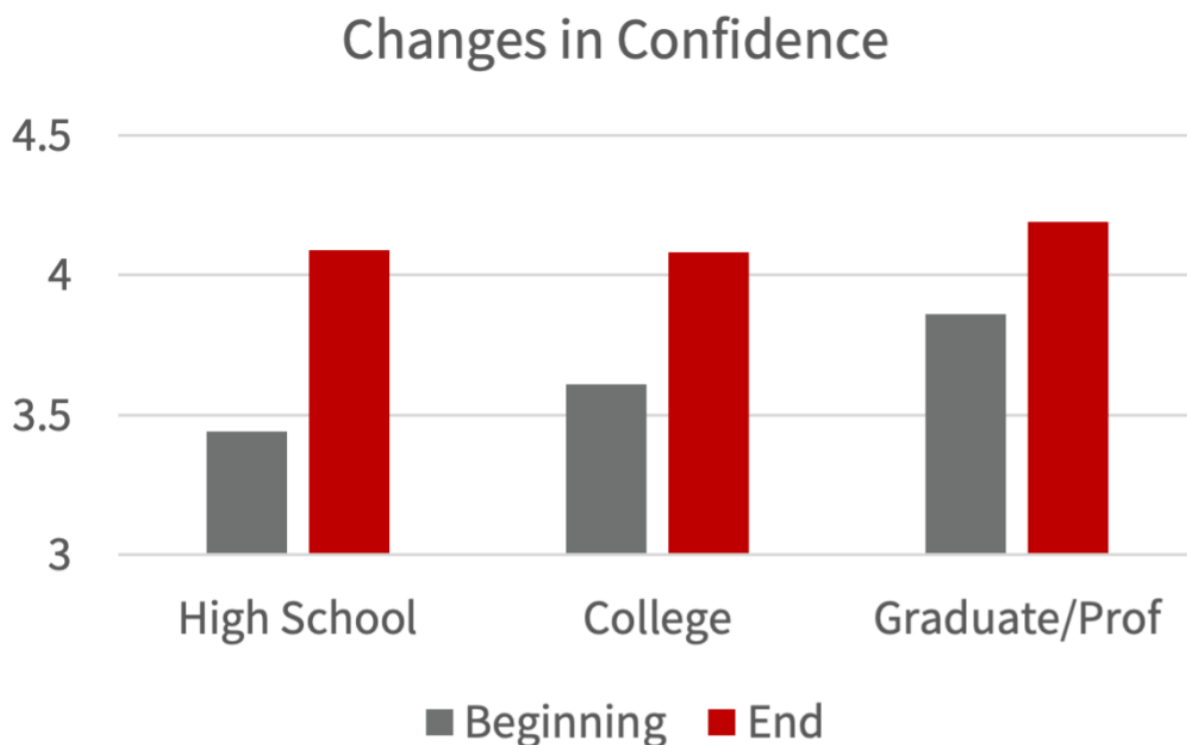


How can community partnerships improve early math learning?

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19 March 2025



Ellen Rydell Altermatt and Andrea K. Rorrer discuss how community partnerships can enhance early math learning

Math skills at school entry are a strong predictor of long-term academic success. However, many children enter school with gaps in foundational math skills and struggle to catch up (Duncan et al., 2007). A recent partnership between Utah's STEM Action Center, the Utah Education Policy Center, and the Department of Pediatrics at the University of Utah Health aims to ensure that all Utah's children start school with a strong foundation in early numeracy.

The need for early numeracy interventions

Early numeracy refers to the foundational math skills, including number recognition and counting, that children frequently learn before kindergarten. Research has shown that a strong home numeracy environment – where caregivers engage children in math-related activities like playing board games, doing puzzles, or measuring ingredients while cooking – can improve these math skills (Mutaf-Yildiz et al., 2020).

However, several misconceptions can make it less common for caregivers to incorporate math into daily routines. These misconceptions include the belief that early math is less important than early literacy, that preschoolers are too young to learn math, and that caregivers do not have the skills they need to effectively engage in math activities with preschoolers (Sonnenschein et al., 2021).

A community partnership solution to early math learning The Math Introductions and Learning Opportunities (MILO) & Friends program, developed by Utah's STEM Action Center, is an early numeracy initiative designed to help caregivers support their children's early math development through playful, everyday interactions.

The UEPC – a university-based research partner for the Utah STEM Action Center – has evaluated the program's effectiveness since 2021. Early findings show that the program's community-based events help caregivers feel more knowledgeable, interested, and confident in engaging young children in math activities.

Positive impacts appear to be particularly pronounced among Spanish-speaking families and caregivers with lower levels of formal education. For example, in a study of 424 caregivers who attended events at preschools where trained staff talked with families about the importance of helping young children develop early math skills and invited them to play a math-related board game, caregivers who reported having a high school diploma or less showed the strongest gains in confidence based on surveys administered at the beginning and end of the event (Altermatt et al., 2023).

To expand the reach and impact of MILO & Friends, the Utah STEM Action Center and the UEPC have now partnered with the Department of Pediatrics at the University of Utah Health. With support from a seed grant through the University of Utah's USTEM Hub, the project team launched a healthcare-based intervention designed to reach 700 families during routine three-year-old well-child visits at three clinics. During visits, pediatricians:

- Share information about the importance of early numeracy and provide simple strategies for integrating math into daily routines, and
- Invite families to take home a math-related board game designed to encourage fun, interactive math learning.

This approach builds on successful healthcare-based literacy initiatives like Reach Out and Read, demonstrating that pediatricians can be strong partners for promoting early learning. Preliminary findings from the healthcare initiative show that participating caregivers engage more frequently in math-related interactions with their preschoolers and feel more confident that they have the resources to support their children's math development. Future research will examine how these interventions impact children's prekindergarten and kindergarten readiness assessment scores.

Early math learning conclusions

Efforts to improve early numeracy outcomes can be strengthened through community partnerships. The project team is already expanding its partnerships beyond healthcare, with the Utah State Library system recently joining the initiative. This library partnership aims to extend the program's reach into rural and remote communities where access to early childhood educational resources may be limited.

As the program grows, it could serve as a national model for embedding early math learning into homes and community spaces, ensuring that all children – regardless of background – have opportunities to develop foundational math skills that will set them up for long-term success.

References

1. Altermatt, E. R., Timmer, M., & Rorrer, A. K. (2023). STEM Action Center's MILO & Friends campaign: Report on survey findings from seminar-style events. Salt Lake City, Utah: Utah Education Policy Center.e
2. Duncan, G. J., Dowsett, C. J., Claessens, A., Magnuson, K., Huston, A. C., Klebanov, P., Pagani, L. S., Feinstein, L., Engel, M., Brooks-Gunn, J., Sexton, H., Duckworth, K., & Japel, C. (2007). School readiness and later achievement. *Developmental Psychology*, 43(6), 1428–1446. <https://doi.org/10.1037/0012-1649.43.6.1428>
3. Mutaf-Yıldız, B., Sasanguie, D., De Smedt, B., & Reynvoet, B. (2020). Probing the relationship between home numeracy and children's mathematical skills: A systematic review. *Frontiers in Psychology*, 11, 2074. <https://doi.org/10.3389/fpsyg.2020.02074>
4. Sonnenschein, S., Stites, M., & Dowling, R. (2021). Learning at home: What preschool children's parents do and what they want to learn from their children's teachers. *Journal of Early Childhood Research*, 19, 309-322. <https://doi.org/10.1177/1476718X20971321>