

## **EARLY STEM MATTERS: PROVIDING HIGH-QUALITY STEM EXPERIENCES FOR ALL YOUNG LEADERS BY EARLY CHILDHOOD STEM WORKING GROUP AT THE UNIVERSITY OF CHICAGO.**

Two-year summary of the work of the Early Childhood STEM Working Group at the University of Chicago, including four key points to consider.

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This report summarizes the work of the Early Childhood STEM Working Group, over a two-year period. The working group consisted of researchers from the University of Chicago, the Erickson Institute, and the Museum of Science, Boston, among others. The report is comprised of five portions: an introduction, a report overview, guiding principles, recommendations, and references and resources. The goal of the article is to link present discussions on STEM education early childhood education, accounting for the local and national conversations of each.

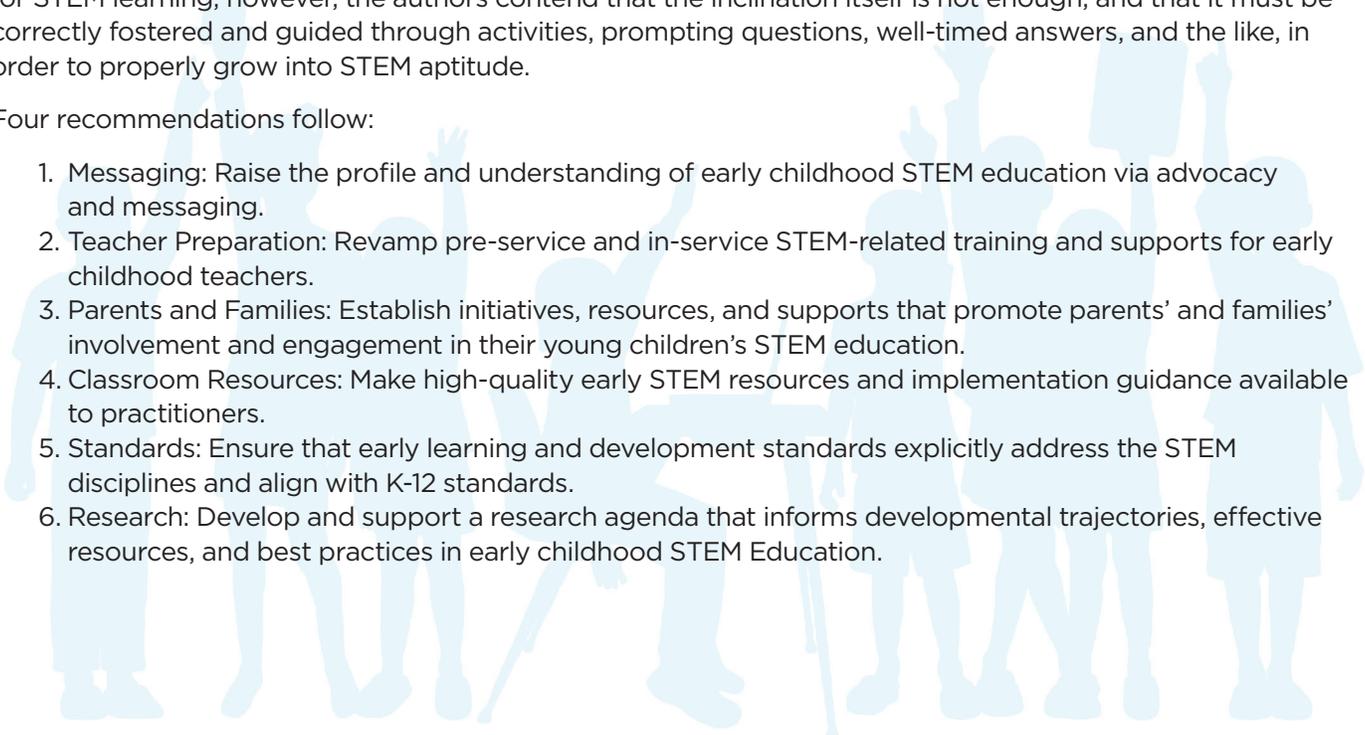
The article is written to provide educational leaders, policy makers, researchers, and funders with useable statistics and activities to promote continued research, practice, and advocacy for early education. The authors also offer examples of learning activities throughout the report, such as easy ways to incorporate science and math vocabulary and thinking skills into playtime activities (like navigating “up,” “through,” “across” and “down” playground equipment, or considering how the measurements of a pumpkin change over time as it grows.) These examples are intended for use in preschools, but are intended for easy application in home settings as well.

The article has a specific structure that helps to highlight the authors’ many focal points. First, four guiding principles are offered:

1. Children need adults to develop their “natural” STEM inclinations.
2. Representation and communication are central to STEM learning.
3. Adults’ beliefs and attitudes about STEM affect children’s beliefs and attitudes about STEM.
4. STEM education is not culturally neutral.

This portion of the report addresses common misappropriations of the principles. For example, the understanding that students are “natural engineers” has led some to believe that the inclination alone is sufficient for STEM learning; however, the authors contend that the inclination itself is not enough, and that it must be correctly fostered and guided through activities, prompting questions, well-timed answers, and the like, in order to properly grow into STEM aptitude.

Four recommendations follow:

1. **Messaging:** Raise the profile and understanding of early childhood STEM education via advocacy and messaging.
  2. **Teacher Preparation:** Revamp pre-service and in-service STEM-related training and supports for early childhood teachers.
  3. **Parents and Families:** Establish initiatives, resources, and supports that promote parents’ and families’ involvement and engagement in their young children’s STEM education.
  4. **Classroom Resources:** Make high-quality early STEM resources and implementation guidance available to practitioners.
  5. **Standards:** Ensure that early learning and development standards explicitly address the STEM disciplines and align with K-12 standards.
  6. **Research:** Develop and support a research agenda that informs developmental trajectories, effective resources, and best practices in early childhood STEM Education.
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Each Recommendation is broken into three parts: “Where We Are,” “Where We Want to Be” and “Steps to Get Us There.” Prominent takeaways in this section include the importance of context in a child’s STEM learning experience, the importance of parents not passing down unspoken assumptions about STEM (e.g., boys are better than girls at engineering), increased research on this topic is a must, and more.

**Early Childhood STEM Working Group at the University of Chicago. (2017) “Early STEM Matters: Providing High-Quality STEM Experiences for All Young Leaders.” UChicago STEM Education.**

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Thanks to generous support from the Carnegie Corporation of New York, *Our Neighborhood*, is a compilation of stories and research from the family engagement field. It is intended to be a living repository and guide for STEM Learning Ecosystems and other communities interested in cultivating strong community partnerships to prepare the next generation.

This annotated bibliography was compiled by TIES for *Our Neighborhood*.