



# Engaging Young Engineers: Teaching Problem Solving Skills Through STEM

*Angela K. Stone-MacDonald Ph.D., Kristen B. Wendell Ph.D., Anne Douglass Ph.D., Mary Lu Love M.S.*

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Help young children **develop problem-solving skills**, and you'll boost their kindergarten readiness and set them up for long-term success in STEM subjects. In this timely and practical book, you'll discover how to support the problem-solving skills of all young children by teaching them **basic practices of engineering** and **five types of critical thinking skills** (Curiosity, Persistence, Flexibility, Reflection, and Collaboration)—**AND** discover how to sharpen all these skills as a teacher! Using a clear instructional framework and fun activities tailored for infants, toddlers, and preschoolers, you'll help children birth to 5 explore big ideas and develop new ways of thinking through engaging and challenging learning experiences. A must for teachers in inclusive early education classrooms, this comprehensive guide is your key to teaching the 21st-century skills children need for STEM learning and school success.

## THE BOOK YOU NEED TO

- **Support school readiness.** The problem-solving framework in this book helps children work toward kindergarten Common Core State Standards, Next Generation Science Standards, and the Head Start Child Development and Early Learning Outcomes Framework.
- **Demystify and teach key engineering practices.** Prepare kids for success in all STEM areas by teaching four essential engineering principles: *think about it, try it, fix it, and share it*.
- **Boost problem-solving skills with proven activities.** All the suggested activities have been piloted and tested in classrooms and incorporate teacher feedback.
- **Plan effective lessons for all children.** Discover how to use universal design for learning (UDL) to plan lessons that work for children with and without disabilities.
- **Start the learning early.** Help even the youngest children develop problem-solving skills with activities tailored for infants, toddlers, and preschoolers.
- **Encourage language and literacy development.** Get suggestions for weaving reading into problem-solving experiences, and discover how your use of language can prompt children's thinking skills.
- **Promote other skills needed for school success.** With the framework and activities in this book, you'll also support development of social-emotional skills, self-regulation, and executive functioning.

**PRACTICAL MATERIALS:** Classroom activities that incorporate children's books, self-reflection checklists, practical strategies and modifications, Early Childhood UDL Planning Sheets, and blank Experience Planning Templates for infants, toddlers, and preschoolers.

**See which domain of school readiness in the Head Start Child Development and Early Learning Outcomes Framework this book addresses.**

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