Young children participate in engineering design and science inquiry from their earliest years as they seek to understand and change their environment. Helping children learn to use materials and their surroundings to build and solve problems is part of early childhood education. Children’s engineering may involve seeking to build a stable tower, using a stick as a tool, or planning a process to take turns.

The goal of this webinar is to help you provide opportunities for children in your program to develop engineering habits of mind: ask questions about a situation they want to change, make observations to understand how one part of a solution affects the others, identify problems and seek solutions, and collaborate with others. Using developmentally appropriate practice, you will learn how to guide children to approach problems with a positive attitude that recognizes failure and trying again as part of a learning process.

Join webinar to:
- Learn the building blocks of Engineering Habits of Mind: systems thinking, creativity, try and try again optimism, and collaboration.
- Discuss ways to nurture engineering habits of the mind and provide time for ‘the process,’ moving away from ‘product’ type engineering.
- View what engineering looks like in early childhood settings—examples of young children’s spontaneous engineering design to solve problems important to them.
- Explore how engineering activities develop communication skills and have real-world context for learning science and mathematics concepts.

Resources: Research, Books, Journal, Online Forum and websites—An incomplete and partial list

ABOUT STEM (Science, Technology, Engineering, and Math)
Engineering in Early Learning Environments: Module 5, STEM for Early Learners, by Beth Van Meeteren. PDG AEM. https://pdg.grads360.org/#program/stem-in-early-childhood
Handout for Early Childhood Investigations Webinar
“Supporting Young Children’s Creative Thinking Using Problems They Care About: Engineering Design In ECE,”
by Peggy Ashbrook, Carrie Lynne Draper, MEd, and Beth Van Meeteren, PhD
June 5, 2019


POSITION STATEMENTS
The National Association for the Education of Young Children (NAEYC) position statements. http://www.naeyc.org/positionstatements

EARLY CHILDHOOD SCIENCE COMMUNITIES OPEN TO ALL.

ABOUT THE NATURE OF SCIENCE
Understanding Science 101, “fun, accessible, and free resource…accurately communicates what science is and how it really works.” http://undsci.berkeley.edu/article/intro_01

ABOUT EARLY CHILDHOOD SCIENCE EDUCATION
ABOUT EQUITY


Embrace Race, a blog and Facebook page. http://www.embracerace.org/

NAEYC Diversity & Equity Education for Adults Interest Forum. https://www.facebook.com/earlyedequity/?fref=ts

National Science Teachers Association (NSTA)

- NSTA/NAEYC Position statement on Early Childhood Science Education (endorsed by the National Association for the Education of Young Children (NAEYC):
  https://www.nsta.org/about/positions/earlychildhood.aspx
- NSTA, The Early Years blog
  http://blog.nsta.org/category/earlyyears/
- Science and Children, NSTA elementary journal including early childhood.
  https://www.nsta.org/elementaryschool/

RESEARCH

Published by the National Academy Press and available online:


Ready, Set, SCIENCE!: Putting Research to Work in K-8 Science Classrooms. (2007)
http://www.nap.edu/catalog/11882/ready-set-science-putting-research-to-work-in-k-8

http://www.nap.edu/catalog/13165/a-framework-for-k-12-science-education-practices-crosscutting-concepts


Published by the National Association for the Education of Young Children (NAEYC)

Developmentally Appropriate Practice in Early Childhood Programs Serving Children from Birth through Age 8, NAEYC position statement. 2009. http://www.naeyc.org/dap

Five Essentials to Meaningful Play by Marcia L. Nell and Walter F. Drew. NAEYC for families online at: https://families.naeyc.org/learning-and-development/child-development/five-essentials-meaningful-play

STANDARDS


Next Generation Science Standards (NGSS)

https://www.nextgenscience.org


APPENDIX E – Progressions Within the Next Generation Science Standards

Appendix F: Science and Engineering Practices in the NGSS

The eight practices of science and engineering that the Framework identifies as essential for all students to learn and describes in detail are listed below:

1. Asking questions (for science) and defining problems (for engineering)
2. Developing and using models
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Using mathematics and computational thinking
6. Constructing explanations (for science) and designing solutions (for engineering)
7. Engaging in argument from evidence
8. Obtaining, evaluating, and communicating information

**BOOKS**


JOURNALS

Science and Children. “The Early Years” column in the National Science Teachers Association (NSTA) elementary school journal, with activities and resource suggestions. [https://www.nsta.org/elementaryschool/](https://www.nsta.org/elementaryschool/)

Teaching Young Children. National Association for the Education of Young Children’s journal designed especially for preschool educators. [https://www.naeyc.org/tyc/](https://www.naeyc.org/tyc/)

Young Children. NAEYC’s peer-reviewed professional journal. [http://www.naeyc.org yc/](http://www.naeyc.org yc/)

ADDITIONAL ONLINE RESOURCES


♦ The Early Years Blog, resources and conversation on PreK-2 Science, the free, online companion to the National Science Teachers Association’s early childhood column in the elementary journal, Science and Children. [http://blog.nsta.org/category/earlyyears/](http://blog.nsta.org/category/earlyyears/)

♦ ExchangeEveryDay newsletter, [https://www.childcareexchange.com/eed/](https://www.childcareexchange.com/eed/)


♦ Pinterest, ECSIF [https://www.pinterest.com/ecsif/](https://www.pinterest.com/ecsif/): search and choose among the many activities and crafts for work that will both honor the capabilities of your students, foster their curiosity, involve a concept important to science, and develop their understanding of the natural and human manufactured world.

♦ Regents’ Center for Early Developmental Education, Director Beth Van Meeteren Ed. D. Develops research-based programs and curriculum materials that respect the unique developmental needs of young children and their families, promotes applied and interdisciplinary research in early education, disseminates information about developmentally appropriate early education to educators, parents, and the public at state, national, and international levels through workshops, conferences, and publications. [https://regentsctr.uni.edu](https://regentsctr.uni.edu)