**STEAM Resources**

Saroj Ghoting March 2020

Here are some STEAM resources and readings that may be of interest to you. I have chosen those that focus on children ages newborn to five years, their families, and those who serve them. Some of these resources cover 3 – 8 year olds, so think about what activities will work best for the children you are targeting.

Many of these resources are steeped in early childhood education. While we gain valuable information from these resources, it is important to recognize, acknowledge, and retain our public library identity, which is informal, not formal, education. We also do not have the same kind of continuity that early childhood educators have. And we DO have the parents/caregivers with the children.

**Cognitive Thinking**

Harvard University Center on the Developing Child [Enhancing and Practicing Executive Function Skills with Children from Infancy to Adolescence](https://46y5eh11fhgw3ve3ytpwxt9r-wpengine.netdna-ssl.com/wp-content/uploads/2015/05/Enhancing-and-Practicing-Executive-Function-Skills-with-Children-from-Infancy-to-Adolescence-1.pdf)

Center for Childhood Creativity Bay Area Discovery Museum <https://centerforchildhoodcreativity.org/research/published/>

**Books: More on theory/background**

Brooks, Jacqueline. Big Science for Growing Minds: Constructivist Classrooms for Young Thinkers. Teachers

College Press, 2011.

Copple, Carol. *Growing Minds: Building Strong Cognitive Foundations in Early Childhood.* NAEYC, 2012.

DeVries, Rheta*. Ramps & Pathways: A Constructivist Approach to Physics with Young Children.* NAEYC, 2011.

Early Math Collaborative. Erikson Institute. *Big Ideas of Early Mathematics.* Pearson, 2013.

Galinsky, Ellen. Mind in the Making. Harper Collins, 2010.

Gelman, Rochel et. al. *Preschool Pathways to Science: Facilitating Scientific Ways of Thinking, Talking, Doing,*

*and Understanding.* Brookes Publishing, 2010.

Rosales, Allen. *Mathematizing: An Emergent Math Curriculum Approach for Young Children.* Redleaf Press, 2015

Stone-MacDonald, Angi et al. *Engaging Young Engineers: Teaching Problem-Solving Skills Through STEM.*

Brookes Publishing, 2015.

Texley, Juliana. *Teaching STEM Literacy.* Redleaf Press, 2018.

Wilburne, Jane et al. *Cowboys Count, Monkeys Measure and Princesses Problem Solve: Building Early Math*

*Skills Through Storybooks.* Brookes Publishing, 2011.

**Books: More practical**

Anderson, Sally. *Where Does My Shadow Sleep? A Parent’s Guide to Exploring Science with Children’s Books.*

Gryphon House, 2012.

Anderson, Sally. *How Many Ways Can You Make Five? A Parent’s Guide to Exploring Math with Children’s Books.*

Gryphon House, 2012.

Anderson, Sally. *Math and Science Investigations: Helping Young Learners Make Big Discoveries.*

Barbre, Jean. *Baby Steps to STEM: Infant and Toddler Science, Technology, Engineering, and Math Activities.*

Redleaf Press, 2017.

Daly, Lisa. *Loose Parts: Inspiring Play in Young Children.* Redleaf Press, 2014.

Daly, Lisa. *Loose Parts 2: Inspiring Play with Infants and Toddlers.* Redleaf Press, 2016.

Epstein, Ann. *Science and Technology.* HighScope, 2012.

Heroman, Cate. *Making & Tinkering with STEM: Solving Design Challenges with Young Children.* NAEYC, 2017.

Isbell, Rebecca & Shirley Raines. *Creativity and the Arts with Young Children.* Wadsworth, 2012.

Mason, Andrienne. Several titles including Touch It! and *Move It!* Kids Can Press

Masterson, Marie. *Serious Fun: How Guided Play Extends Children’s Learning.* NAEYC, 2019.

NAEYC. *Exploring Math & Science in Preschool.* NAEYC, 2015.

Strasser, Janis and Lisa Bresson. *Big Questions for Young Minds: Extending Children’s Thinking.* NAEYC, 2017.

Weiner, Marcella, ed. STEM Made Simple: 25 Activities by Preschool Teachers. HighScope, 2018.

**Websites/Articles:**

Kids are born scientists video by cosmologist Neil deGrasse Tyson <https://www.youtube.com/watch?v=tbX6aMfPtEw>

Brooklyn (NY) Public Library STEM for Babies and Toddlers <http://www.bklynlib.org/stembabytoddler>

Roots of STEM Success: Changing Early Learning Experiences to Building Lifelong Thinking Skills <http://centerforchildhoodcreativity.org/wp-content/uploads/sites/2/2018/02/CCC_The_Roots_of_STEM_Early_Learning.pdf>

[Early STEM Learning](http://modules.ilabs.uw.edu/module/early-stem-learning/) by Institute for Learning & Brain Sciences, University of Washington

Talking Is Teaching STEM Resources <http://talkingisteaching.org/resources/stem> and at <https://www.acf.hhs.gov/ecd/learning-about-stem>

Math Talk with Infants and Toddlers by NAEYC <https://www.naeyc.org/our-work/families/math-talk-infants-and-toddlers>

Compilation of State Early Learning Guidelines, many of which contain STEM domains. <https://childcareta.acf.hhs.gov/sites/default/files/public/075_1707_state_elgs_web_final.pdf>   
Also: <https://www.readingfoundation.org/readyforkindergarten/about-the-program> [News You Can Use: Early Science Learning for Infants and Toddlers](https://eclkc.ohs.acf.hhs.gov/sites/default/files/pdf/nycu-early-science.pdf) by Head Start, Early Head Start & Migrant/Seasonal Programs

Massachusetts Board of Education. Early Childhood Advisory Council. Guidelines for Preschool Learning Experiences. <https://www.mass.gov/doc/guidelines-for-preschool-learning-experiences-updated-november-2019/download> includes activities, see sections on Math and Science and Technology/Engineering

National Association for the Education of Young Children STEM Resources <https://www.naeyc.org/resources/topics/stem>

Zero to Three [Early Math and Science](https://www.zerotothree.org/early-learning/early-math-and-science)

California Math Council: Math at Home Guides <https://www.cmc-math.org/math-at-home-guides> and other resources

[Positive Early Math Experiences for African American Boys](https://www.naeyc.org/resources/pubs/yc/may2018/positive-early-math-af-am-boys) by Danielle Davis and Dale Farran *Young Children*, May 2018.

Joann Ganz Cooney Center STEM Starts Early Report <http://joanganzcooneycenter.org/wp-content/uploads/2017/01/jgcc_stemstartsearly_final.pdf>

Cuffaro, Harriet. When Unit Blocks Came to Gardaborg <https://educate.bankstreet.edu/cgi/viewcontent.cgi?article=1033&context=occasional-paper-series>

How Process-Focused Art Experiences Support Preschoolers by Laurel Bongiorno NAEYC <https://www.naeyc.org/resources/pubs/tyc/feb2014/process-art-experiences>

Technology

[Reading to Your Toddler? Print Books Are Better Than Digital Ones](https://www.nytimes.com/2019/03/25/well/family/reading-to-your-toddler-print-books-are-better-than-digital-ones.html) *New York Times* March 25, 2019

[Print Books vs. E-books](http://joanganzcooneycenter.org/wp-content/uploads/2012/07/jgcc_ebooks_quickreport.pdf). The Joan Ganz Cooney Center Spring 2012

[Technology and Interactive Media as Tools in Early Childhood Programs Serving Children from Birth Through Age 8](https://www.naeyc.org/sites/default/files/globally-shared/downloads/PDFs/resources/topics/PS_technology_WEB.pdf): joint position statement of the national Association for the Education of Young Children and the Fred Rogers Center for Early Learning and Children’s Media at Saint Vincent College. 2012.

[Media and Young Minds: Position Statement](http://pediatrics.aappublications.org/content/pediatrics/early/2016/10/19/peds.2016-2591.full.pdf) by American Academy of Pediatrics. *Pediatrics*. Nov., 2016.

[Linguistic Genius of Babies](https://www.ted.com/talks/patricia_kuhl_the_linguistic_genius_of_babies) TED Talk (video) by Patricia Kuhl

[Media and Children](https://www.youtube.com/watch?v=BoT7qH_uVNo) TEDxRainier Talk (vide) by Dimitri Christakis

[What’s Going On in Your Child’s Brain When You Read Them a Story?](https://www.npr.org/sections/ed/2018/05/24/611609366/whats-going-on-in-your-childs-brain-when-you-read-them-a-story) By Anya Kamenetz NPREd   
 May 24, 2018.

Engineering

[STEM Moments: Everyday Fun with Engineering and Technology](http://talkingisteaching.org/assets/general/Everyday-Fun-With-Engineering.pdf) Talking Is Teaching

Daly, Lisa. *Loose Parts: Inspiring Play in Young Children*. Redleaf Press, 2014.

Daly, Lisa. *Loose Parts 2: Inspiring Play with Infants and Toddlers*. Redleaf Press, 2016.

Heroman, Cate. *Making & Tinkering with STEM: Solving Design Challenges with Young Children.* NAEYC, 2017.

Stone-MacDonald, Angi et al. *Engaging Young Engineers: Teaching Problem-Solving Skills Through STEM*. Brookes Publishing, 2015.

Arts

[How Process-Focused Art Experiences Support Preschoolers](https://www.naeyc.org/resources/pubs/tyc/feb2014/process-art-experiences) by Lauren Bongiorno in *Teaching Young Children*, Feb/March 2014.

Stewart, Charlina. Early Art: What It Means and How to Encourage It <http://www.pbs.org/parents/education/music-arts/early-art-what-it-means-and-how-to-encourage-it/>

Rymancowicz, Kylie. The Art of Creating: Why Art Is Important for Early Childhood Development <http://msue.anr.msu.edu/news/the_art_of_creating_why_art_is_important_for_early_childhood_development>

*Reading Picture Books with Children: How to Shake Up Storytime and Get Kids Thinking About What They See* by Megan Lambert. Charlesbridge, 2015.

[Reading Picture Books with Children](https://www.slj.com/2016/01/interviews/reading-picture-books-with-children-an-interview-with-megan-dowd-lambert-professional-shelf/#_): An Interview with Megan Dowd Lambert by Alicia Eames School Library Journal Online January 11, 2016.

[What Is Arts Integration? Explore the Kennedy Center’s Comprehensive Definition](https://www.kennedy-center.org/education/resources-for-educators/classroom-resources/articles-and-hot-tos/articles/collections/arts-integration-resources/what-is-arts-integration/)

[How to Teach Visual Thinking Strategies to Your Students](https://www.educationworld.com/a_lesson/teaching_visual_thinking_strategies.shtml) by Smantha DiMauro. Education World Online

[Creating Coding Stories and Games](https://www.naeyc.org/resources/pubs/tyc/feb2017/creating-coding-stories-and-games) by Deanna McLennan in *Teaching Young Children*, Feb/March 2017.

[Learning to Write and Draw](https://www.zerotothree.org/resources/305-learning-to-write-and-draw) by Parenting Resource. Zero to Three. Feb 25, 2016.

[An Art Teacher’s Guide to Understanding STEAM Education](https://www.theartofed.com/2017/09/06/art-teachers-guide-understanding-steam-education/) by Wynita Harmon