

BOOKS

Clements, D. H., & J. Sarama. 2014. *Learning and Teaching Early Math: The Learning Trajectories Approach*. New York, NY: Routledge.

This book describes the learning trajectories approach to teaching young children mathematics. Chapter 2 specifically deals with number, counting, and subitizing. It describes developmental progression and activities at each level.

ARTICLES

Clements, D. H. 1999. "Subitizing: What Is It? Why Teach It?" *Teaching Children Mathematics* 5 (7): 400-405. <http://gseweb.gse.buffalo.edu/fas/clements/files/Subitizing.pdf>.

This article describes the history of subitizing and the two types of subitizing—perceptual and conceptual. It includes implications for teaching conceptual subitizing and number recognition as well as conceptual subitizing and arithmetic.

Conderman, G., M. Jung, & P. Hartman. 2014. "Subitizing and Early Mathematics Standards: A Winning Combination." *Kappa Delta Pi Record* 50 (1): 18-23.

This article defines subitizing and shares why it is important. It shares ways to include subitizing in math curriculum. The article lists Common Core and NCTM standards and includes subitizing activities that align with the standards.

WEB RESOURCES

Boucher, D. 2011. "Subitizing: Moving from Perceptual to Conceptual." <http://www.mathcoachscorner.com/2016/07/subitizing-moving-from-perceptual-to-conceptual>.

This online article describes perceptual and conceptual subitizing and includes tips for teaching subitizing. It also has links to subitizing games and activities.

Early Childhood Learning & Knowledge Center. 2018. "Effective Practice Guides: Emergent Mathematical Thinking." <https://eclkc.ohs.acf.hhs.gov/school-readiness/effective-practice-guides/emergent-mathematical-thinking>.

This effective practice guide provides information about mathematical teaching practices that support children's development. The guides show what these practices look like in early learning settings. They also help staff reflect on and improve their teaching practices.

Early Childhood Learning & Knowledge Center. 2018. "High Five Mathematize." <https://eclkc.ohs.acf.hhs.gov/publication/high-five-mathematize>.

High Five Mathematize is an Early Head Start and Head Start math resource that promotes teaching math concepts through children's play and everyday experiences by bringing out the math in what they are doing. The guide uses professional development resources and tools to promote high-quality math education.

Early Childhood Learning & Knowledge Center. 2018. "Making it Work: Implementing Cultural Learning Experiences in American Indian and Alaska Native Early Learning Settings." <https://eclkc.ohs.acf.hhs.gov/culture-language/article/making-it-work-implementing-cultural-learning-experiences-american-indian>.

This website, the Head Start Early Childhood Learning & Knowledge Center, features multiple *Making it Work* resources. These resources help American Indian and Alaska Native (AIAN) early education staff meet these goals as they teach children about their traditional cultural skills, values, beliefs, and lifeways.

Early Childhood Learning & Knowledge Center. 2012. "News You Can Use: Supporting Early Math Learning for Infants and Toddlers." <https://eclkc.ohs.acf.hhs.gov/sites/default/files/pdf/nycu-early-math-learning.pdf>.

This article provides ways to recognize and support early math learning for infants and toddlers including ways to engage families in helping children development math skills.

Erikson Institution. 2018. "Topic: Subitizing." <http://earlymath.erikson.edu/tag/subitizing/>.

This website has links to information on teaching and activities for subitizing. The links contain both written articles with information and video examples and instructions.

Clements, D. H., & J. Sarama. 2018. "Learning and Teaching with Learning Trajectories (LT2)." <http://LearningTrajectories.org>.

This free website has a full learning trajectory for number recognition and subitizing (as well as other topics). It includes information about subitizing and why it is important, the learning path most children follow as they learn number recognition and subitizing, and educational activities to help children at each level build their understanding and skill. It also includes software based on research in entertaining contexts that helps children moves through the levels.

National Council of Teachers of Mathematics. <https://www.nctm.org/>.

This council is the largest mathematics education organization in the United States and Canada. The council advocates for high-quality mathematics teaching and learning for all students. Read research articles, find out about conferences, and learn about best math practices in the classroom.

VIDEOS

If you are interested in viewing videos of children's development and activities that support subitizing, <https://www.learningtrajectories.org/> houses many videos that show viewers what each developmental step looks like for perceptual and conceptual subitizers, as well as many other areas of math development and learning. This free web resource also includes instructional activities for small and whole groups. The following videos are samples from the Learning and Teaching with Learning Trajectories website.

Perceptual Subitizer. <https://www.learningtrajectories.org/video/5159>.

This video is an example of perceptual subitizing. The child quickly subitizes three grapes and one grape.

Conceptual Subitizer. <https://www.learningtrajectories.org/video/2846>.

This video is an example of conceptual subitizing. The child quickly names two groups as five in two different arrangements.

Number Me Instructional Video. <https://www.learningtrajectories.org/video/6900>.

This is an instructional video where the teacher leads the children through an activity naming how many of a specific body part they have, such as one nose or two arms.

Math and the Preschool Child: High Five Mathematize.

<https://eclkc.ohs.acf.hhs.gov/sites/default/files/pdf/nycu-early-math-learning.pdf>.

This webinar describes how to help teachers bring out the math in children's everyday activities. It also reviews resources and tools to help supervisors support teaching staff in four areas—numbers and operations, geometry and spatial sense, patterns, and measurement.

Preschool Math Ideas: Hiding in Plain Sight.

<https://eclkc.ohs.acf.hhs.gov/teaching-practices/teacher-time-series/preschool-math-ideas-hiding-plain-sight>.

Learn about the many ways to teach math through children's daily learning activities and environments, including storybooks. Watch videos of teachers in action, using math and science in their classrooms. Presenters introduce the concept of mathematizing—noticing, bringing out, and talking about the math that's all around us.