

SCIENCE LEARNING AND TEACHING

Science in the Early Years

Brenneman, K. (2014, June). Science in the early years. *The Progress of Education Reform, 15*(2). Retrieved from http://www.ecs.org/clearinghouse/01/12/88/11288.pdf

This publication describes the benefits of early childhood science and gives policy recommendations.

Learning to Teach Science: Strategies that Support Teacher Practice

Chalufour, I. (2010). Learning to teach science: Strategies that support teacher practice. *Beyond This Issue: Early Childhood Research & Practice*. Retrieved from http://ecrp.uiuc.edu/beyond/seed/chalufour.html

This paper identifies pedagogical science knowledge (PSK) as a fundamental part of teaching science to young children. PSK includes an understanding of science skills and concepts, knowledge of children's learning, and skills in effectively guiding children's science investigations. The article highlights a class that supported teachers in these areas.

New School Readiness Indicators

Grissmer, D., Grimm, K., Aiyer, S. M., Murrah, W. M., & Steele, J. S. (n.d.) *New school readiness indicators*. Retrieved from the University of Virginia Curry School of Education's Center for Advanced Study of Teaching and Learning website: http://curry.virginia.edu/uploads/resourceLibrary/Research_Brief-Readiness_Indicators.pdf

This research brief summarizes the results of a study on fine motor skills and early understanding of the world. The study found that young children's concentration and fine motor abilities, plus their general knowledge of the world, are stronger predictors of later school achievement than young children's math or reading scores.

NSTA Position Statement: Early Childhood Science Education

National Science Teachers Association. (2014). *NSTA Position Statement: Early Childhood Science Education*. Retrieved from http://www.nsta.org/about/positions/earlychildhood.aspx

This statement lays out principles for guiding science learning for preschool children. It also provides recommendations for professional development for preschool teachers in the area of science and ways that administrators and others in leadership roles in early childhood education can promote science learning.

The Office of Head Teacher's Guide to the Discovering Science Webcast Series

Office of Head Start. (2009). The Office of Head Start Teacher's Guide to the Discovering Science Webcast Series. Retrieved from http://eclkc.ohs.acf.hhs.gov/hslc/tta-system/teaching/eecd/Domains%20of%20Child%20Development/ Science/ohs-science-guide-english.pdf

This guide focuses on skills children develop as they investigate the natural world, and it provides links to related resources.



SCIENCE CONCEPTS

Creatures in the Classroom: Including Insects and Small Animals in Your Preschool Gardening Curriculum

Hachey, A. C., & Butler, D. (2012, March). Creatures in the classroom: Including insects and small animals in your preschool gardening curriculum. *Young Children*, *67*(2), 38–42. Retrieved from https://www.naeyc.org/tyc/files/tyc/file/V5N5/HacheyButler.%20Creatures%20in%20the%20Classroom.pdf

This article talks about studying creatures in the soil that are critical to gardening and the health of plants. Caring for insects and small animals from the garden can encourage content knowledge, investigations, and science process skills.

Early Learning Standards in Action: Young Children Exploring Motion

Sherwood, E. A., & Freshwater, A. (2006, September). Early learning standards in action: Young children exploring motion. *Beyond the Journal: Young Children on the Web*, *61*, 1–13. Retrieved from http://www.naeyc.org/files/yc/file/200609/SherwoodBTJ.pdf

This article talks about engaging activities that can address rising program standards for preschool children. The authors describe their experiences with a classroom marble-painting activity where children can use scientific inquiry skills to learn about motion and other concepts.

Ramps and Pathways: Developmentally Appropriate, Intellectually Rigorous, and Fun Physical Science

Zan, B., & Geiken, R. (2010, January). Ramps and pathways: Developmentally appropriate, intellectually rigorous, and fun physical science. *Young Children, 65*, 12–17. Retrieved from http://www.naeyc.org/files/naeyc/Ramps_Pathways.pdf

The authors describe their experiences doing Ramps and Pathways activities with young children based on a curriculum they developed. The article highlights the way simple materials can encourage children's natural science investigations around concepts, such as action and reaction, and their engagement in the activities. The authors provide tips as to how to design successful physical science activities.

CULTURAL CONSIDERATIONS

Using Cultural Themes in Science

Dubosarsky, M., Murphy, B., Roehrig, G., Frost, L. C., Jones, J., & Carlson, S. P. (2011, September). Animosh tracks on the playground, minnows in the sensory table: Incorporating cultural themes to promote preschoolers' critical thinking in American Indian Head Start classrooms. *Young Children*, 66(5), 20–29. Retrieved from http://eclkc. ohs.acf.hhs.gov/hslc/tta-system/cultural-linguistic/Dual%20Language%20Learners/ecd/culture_and_diversity/ Incorportaing-cultural-themes.pdf

This article describes a professional development program for Head Start teachers on the White Earth reservation in Minnesota that was designed to support teachers as they developed inquiry-based, culturally relevant science and math activities.

SCIENCE AND OTHER DOMAINS

Science and Language and Literacy

Conezio, K., & French, L. (September, 2002). Science in the preschool classroom: Capitalizing on children's fascination with the everyday world to foster language and literacy development. *Young Children, 57*, 1–5. Retrieved from http://eclkc.ohs.acf.hhs.gov/hslc/tta-system/teaching/eecd/Domains%20of%20Child%20Development/Science/ScienceInThePreschoolClassroom.pdf

This article describes ways to use children's interest in the natural world to encourage language and literacy development.



For more information, contact us at: NCQTL@UW.EDU or 877-731-0764 This document was prepared under Grant #90HC0002 for the U.S. Department of Health and Human Services, Administration for Children and Families, Office of Head Start, by the National Center on Quality Teaching and Learning. SPRING 2015