Early Childhood Resources Review

TEACHING STEM IN THE PRESCHOOL CLASSROOM: EXPLORING BIG IDEAS WITH 3- TO 5-YEAR-OLDS

Teaching STEM in the Preschool Classroom: Exploring Big Ideas with 3- to 5-year-olds (Lange, Mano, and Brenneman 2019) is written in a conversational style, as the authors share personal growth anecdotes. It offers strategies for developing a positive attitude for teaching STEM (science, technology, engineering, and mathematics) and assures educators that STEM learning is developmentally appropriate for preschoolers. In Part I, the authors recommend that you “allow yourself to play around with STEM,” notice and take “advantage of the spontaneous opportunities that arise every day,” “start slowly,” and if you make mistakes, “reflect on what worked and what didn’t, and try again” (pp. 14–15). The authors note that reflection revealed the importance of allowing children to lead in explorations and recommend creating a space where “children are free to explore with all their senses … to directly manipulate and change the environment.” [This] will promote the necessary skills and dispositions for engaging in STEM” (p. 17).

The four domains in STEM are addressed in separate chapters in Part II. Readers will value this work for the robust chapter on math, which includes a table listing more than 20 concepts and content areas in the section, “What is the content of math?” Included in each chapter are sections titled “Spotlight on Practice” and “Bringing it Home and Back.” The Spotlight sections describe how a classroom teacher implements a science, engineering, and math learning activity, or uses technology. The Bringing sections offer ways to connect with and engage families in STEM learning. Pair this book with resources that may not be evident in this work, such as one on the practices of science and engineering in science inquiry (Hoisington 2018) and a reference on safety (Roy 2015, 2016).

To learn more about teaching STEM, start or join a professional learning community and read and discuss each chapter in Teaching STEM in the Preschool Classroom on the domains of STEM and view together the related free online webinar, STEM for Early Learners (PDG), for an extension.

Prior to the development of the internet, educators used books and journals, and wove together the advice and wisdom of veteran teachers and scientists, as resources for their own learning. Today the easy access to online resources may make books and journals seem obsolete, but they are available online too, and provide the research foundation that some other online resources do not. A useful tool for choosing high-quality STEM resources is the series of questions for reflection, published in a recent article by National Association for the Education of Young Children titled, “To Pin or Not to Pin? Choosing, Using, and Sharing High-Quality STEM Resources” (Peterson et al. 2019). Questions in this article include: What is there for children to THINK about? Are there opportunities for them to make claims? Can they come up with their own ideas based on evidence? Does the activity engage children in thinking about scientific concepts? The process of making claims based on evidence is central to scientific reasoning, as noted in A Framework for K–12 Science Education:

“What engages all scientists, however, is a process of critique and argumentation. Because they examine each other’s ideas and look for flaws, controversy and debate among scientists are normal occurrences, neither exceptional nor extraordinary (p. 78).”

All resources include some useful strategies or information about how children learn, so relying on just one will limit one’s growth as an educator.

REFERENCES
Preschool Development Grants (PDG) and AEM. STEM for Early Learners webinar series. https://pdg.grads360.org/#program/stem-in-early-childhood

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