

STEM is a growing national movement in K–12 schools that is beginning to make a footprint in the field of early education. STEM, an acronym that originated with the National Science Foundation (NSF), refers to NSF’s education-related programs in the disciplines of science, technology, engineering, and math.

Early education classrooms provide young children with the perfect setting for learning in each of the STEM disciplines. The National Research Council states that “lifelong scientific literacy begins with attitudes and values established in the earliest years” (1996). As children learn through play, the STEM philosophy of teaching supports teachers in helping children integrate knowledge across all disciplines and developmental domains.

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At Heritage School in Wayne, Pennsylvania, a Christian preschool and kindergarten, STEM is being put into practice. The teachers are integrating at least two of the disciplines within a curricular activity. Using their Discovery Outdoor classroom, which was established in the fall of 2010, the teachers developed a science curriculum that seamlessly blended the outdoor discovery with the teaching that was occurring inside. During this time, the children, as natural scientists, generated more questions that led to more research and investigation. The teachers expanded their planning to further engage their students. This curriculum design created an opportunity for the young learners to have access to real, open-ended materials, providing an opportunity for exploration at their own pace. But dare the teachers leave it there?

In the spring of 2014, the teachers found themselves integrating the STEM philosophy of teaching into much of the curriculum. The pre-K teachers were thinking out of the box, weaving STEM into the block corner, introducing simple machines and robotics (Cubelets), while intentionally planning for critical thinking through the disciplines.

Adding STEM to Heritage School’s curriculum has turned the early education environment into an organized chaos reflecting the satisfaction of true learning and inquiry. Teachers at Heritage School continue to introduce new creative materials from everyday life. In October 2014, the school held a week-long on-campus field trip. Harvest Days took the place of the pumpkin patch trip, and it was set up in the Discovery Woods and Gardens, their outdoor classroom. There were

20 learning stations: Tree harvesting/paper making, Johnny Appleseed, measuring, tasting, graphing, cooking, predicting, building with inclines, rolling pumpkins, pulling wagons, harvest vegetables, and of course a time in the Country Mud Kitchen with a reading of “Stone Soup.” This was a week of hands-on inquiry with plenty of follow-up in the classroom.

Thanks to the generosity of parents, friends, and the Wayne community, Heritage School has been able to enrich its curriculum in the indoor and outdoor classroom settings by integrating learning tools such as the Cubelets, materials to build simple machines, and teacher iPads, to name a few. Investigative inquiry has developed in the minds of young learners as teachers have integrated STEM into the curriculum. The children are given a chance to solve their own problems and gain the confidence needed to forge ahead, have fun, and become inquisitive learners!

The Heritage School teachers and aides are intentionally sharpening their skills and knowledge to be prepared for team planning. It will be a year of STEM education through hands-on learning and *play!*

For pictures and further information, visit www.heritagekids.org.

Resources

Blagojevic, Bonnie, and Karen Thomas. 2013. Preschoolers take tech outdoors, *Teaching Young Children* 7, no. 2: 30–31. <http://www.naeyc.org/tyc/article/preschoolers-take-tech-outdoors>.

Carnegie Mellon University. 2008. *STEM education in Southwestern Pennsylvania: Report of a project to identify the missing components*. Pittsburgh: Carnegie Mellon University. <http://www.cmu.edu/gelfand/documents/stem-survey-report-cmu-iu1.pdf>.

Moomaw, Sally, and Jaumall A. Davis. 2010. STEM comes to preschool. *Young Children* 65, no. 5 (September): 12–18.

Moomaw, Sally. 2013. *Teaching STEM in the early years: Activities for integrating science, technology, engineering, and mathematics*. St. Paul, MN: Redleaf Press.

Sneideman, Joshua M. 2013. Engaging children in STEM education early! Natural Start Alliance, North American Association for Environmental Education. <http://naturalstart.org/feature-stories/engaging-children-stem-education-early>.

Reference

National Research Council. 1996. *National science education standards*. Washington DC: National Academy Press.

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