

Dancing About Geometry: Bringing the Arts into STEM | Series Made Simple Fall 2013

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Chelsey Philpot

Would you perform a ballet that was inspired by a geometry lecture? What about a puppet show about engineering? Sounds outright odd, right? But maybe dancing about math would feel less strange if you knew that young learners would never forget the lesson. Proponents of STEAM (science, technology, engineering, arts, and math) education argue just that.

The Wolf Trap Institute for Early Learning Through the Arts, which was established in 1981 at the Wolf Trap Foundation for the Performing Arts in Vienna, VA, has an innovative and unique program, Early Childhood STEM Learning Through the Arts. It trains educators—whether they're leading lessons about space, addition, or even architecture—to use the arts in their classrooms. Wolf Trap's teaching artists conduct workshops to pass on puppetry, creative movement, and dramatic skills and they visit classrooms to help early childhood educators rethink the way they're constructing STEM (science, technology, engineering, and math) curriculums.

But how can teacher librarians integrate the arts into their lessons while meeting the Common Core standards? As Akua Kouyate, Wolf Trap's senior director of education, explains, it's easier than you think. "The basis of all learning happens in early childhood," she says. And educators should be, "[u]tilizing the arts as the vehicle for active learning."



From the top: photo by Jonathan Timmes; photo by Scott Suchman.

It's all about active learning

"We can ignite that desire, that appreciation, that love of [STEM] through the arts because the arts are about active learning," says Kouyate, explaining that children learn through using all five of their senses.

So why not teach chemistry by cooking and math by folding origami? Use movement to explore height, length, and width. As Kouyate explains in an online video, "When you're thinking about dance, consider that we're constantly moving and developing and creating shapes. Shapes are geometry."

Catch them young

"[T]he reality is that the studies show that often by the time children get to third grade they've lost interest or did not develop interest in the areas of STEM," says Kouyate. "And certainly by the time they get to the high school level they've already decided if they really like it or not."

Start with nonfiction and literature

Kouyate has an anecdote about an educator who used nonfiction and dramatic play to teach students about space and another about a teacher who taught engineering by using the story of the *Three Little Pigs*.

In *SLJ*'s October 2013 article "Full STEAM Ahead," author Amy Koester describes reading Tedd Arnold's *Parts* (Dial, 1997) to preschoolers before leading them in hands-on activities, such as creating a "stomach" with a plastic bag to understand digestion.

Create global citizens

Through dramatic play, students learn problem-solving skills and develop creativity—honing their STEM knowledge along the way. Budding scientists and engineers are born in classrooms full of paints and costumes.

Rick Stephens, senior vice president of human resources and administration at Boeing and the chairman of the Aerospace Industries Association Career and Workforce Steering Committee, stated in an article for the Department of Education that, "Children whose imaginations are sparked by someone who reveals the possibilities of math or science tend to gravitate towards STEM-related interests. When this happens, that person is typically an inspiring teacher."

Kouyate believes that the children who become interested in STEM early through the arts and active play grow up to be inventive adults who can contribute to the 21st-century global economy.

The arts are central to education

"Arts have always been an important part of our lives," says Kouyate. "I think that as a society we need to recognize that learning across the full spectrum of the disciplines, including the arts, makes for the well-rounded citizen who can contribute significantly to society. We are not theory and rules alone. It is that creative initiative, problem-solving area that the arts help to cultivate in anybody who engages in them that makes the information that much more viable and important."

STEM Learning for more information, go to:

[Wolf Trap's Early Childhood STEM Learning Through the Arts](#)