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Teachers are using theater and dance to teach math — and it's working

By Moriah Balingit February 22

The children puffed out their chests and mimicked drama teacher Melissa Richardson, rehearsing their big, booming "rhino voices."

"Giant steps, giant steps, big and bold!" the kindergartners yelled in unison in a classroom at Westlawn Elementary in Fairfax County.

In groups, the children were then cast as animals and bugs: Big, stomping rhinos; delicate lady bugs skittering across the tile; leaping kangaroos and tiny frogs. All made their way to the classroom's imaginary "water hole," formed with blue tape.

This giggly play session actually was a serious math lesson about big and small and non-standard measurements. Dreamed up by Richardson and kindergarten teacher Carol Hunt, it aims to get the children to think of animal steps as units of measurement, using them to mark how many it takes each animal to get from a starting line to the target.

Teachers call such melding of art and traditional subjects "art integration," and it's a new and increasingly popular way of bringing the arts into the classroom. Instead of art as a stand-alone subject, teachers are using dance, drama and the visual arts to teach a variety of academic subjects in a more engaging way.

Middle-school students in Arlington have built sculptures to learn about exponents, and students have used art to express their thoughts and opinions about police brutality and racial equality. Educators and artists who are proponents of the method say it reaches students who might not otherwise absorb traditional classroom methods.

The Wolf Trap Institute, based at the Wolf Trap Foundation for the Performing Arts, brought Richardson to Westlawn Elementary through a program that pairs art teachers with early-childhood educators to formulate math lessons. The program also provides professional development to teachers.

And the program appears to have been effective: A study by the American Institutes for Research found that students in classes headed by Wolf Trap-trained teachers performed better on math assessments than did their peers being taught by teachers who were not in the program.

Researchers found that pre-kindergarten and kindergarten students in classes taught by Wolf Trap-trained teachers gained about 1.3 months of math learning in the first year over their peers. By the second year, they were 1.7 months ahead.

Researcher Mengli Song said the students in the program did not necessarily learn additional math content but they did demonstrate a better grasp of the material. And the effect was comparable to other early-childhood interventions.

"It's not a huge effect, but it's a non-trivial, notable effect," Song said.

Researchers followed students in 18 schools. In 10 of the schools, Wolf Trap Institute art teachers helped classroom teachers generate math lessons. In the other eight, teachers taught students as they normally would. Researchers administered math assessments to about eight students per class.

Teachers who were trained by the master artists and participated in professional development with Wolf Trap continued to use what they learned in their classrooms, even when they were no longer working with teaching artists, the study found. It demonstrated that a year or two of training could have a lasting impact.

Hunt said it can be difficult to work with the arts-integration lessons — they take far more time to plan and it can be challenging to figure out how to use drama to teach a math concept. But she has worked well with Richardson and has seen the payoff.

Hunt's students were not among those researchers studied. A 17-year veteran of teaching kindergarten, she said the arts integration lessons are one way to reach children who struggle with English. The vast majority of her 22 students are English-language learners.

Some mix up the word "big" and "small," so teaching the concept can be a challenge. In the lesson with the animals, she attempted to demonstrate that the smallest animal took the greatest number of steps to the pond — in other words, that a big number can still signify something small.

"Visually they need to see that," Hunt said. "That concept is very difficult. The numbers are big but the measurements are small . . . it makes so much more sense when they act it out."

Richardson said some children can struggle with math because it's abstract. Children can get emotionally invested in acting out a story, though, that involves counting. And they are exceptionally good with imagination, far better than her adult acting students, she said.

On that day, the children did not totally grasp the concept, but they practiced counting by fives and studied how some animals have larger strides then others. And judging by the giggles, smiles and their enthusiastic participation, they had fun, too.

"Which animal had the biggest jumps or steps?" Hunt asked, pointing to the chart that listed rhino, frog, ladybug and kangaroo.

"A panda!" one girl yelled enthusiastically.

Hunt said that's the other key. Her students never get bored when they are involved in the arts-integration lessons, even if they do get "wiggly."

Jennifer Cooper, director of the Wolf Trap Institute for Early Learning Through the Arts, said arts integration — particularly lessons where children get to move and play — is a good way to reach a lot of children who struggle with traditional book lessons.

"By embodying a concept . . . and putting it through your body in a multi-sensory way, you're going to reach a lot of different kinds of learners," Cooper said.

Moriah Balingit writes about education for the Post.
