

Early Childhood STEM Learning Through the Arts

The earlier
STEM learning starts,
the more it counts.





And the best way to reach and teach young children is through the arts.

Children learn through discovery.

They find their fingers and toes, identify objects, taste new foods, make friends, explore their surroundings, build with blocks, and take things apart. As they investigate the world around them, young children are constantly learning, developing interests, desires, and abilities. In the first five years of life, when most brain growth occurs, children are set on the course for their future success in school and in life.

That's where Wolf Trap Institute comes in, with proven arts-based strategies that help early

childhood educators harness children's natural curiosity and learning potential. Young children learn through positive experiences and intentional teaching, the catalysts that promote skills required for the 21st century: creativity, critical thinking, communication, and collaboration. While most current and planned STEM (science, technology, engineering, and math) education efforts focus on children in elementary and secondary schools, Wolf Trap has already begun to successfully introduce STEM concepts through imaginative teaching in early childhood education settings.

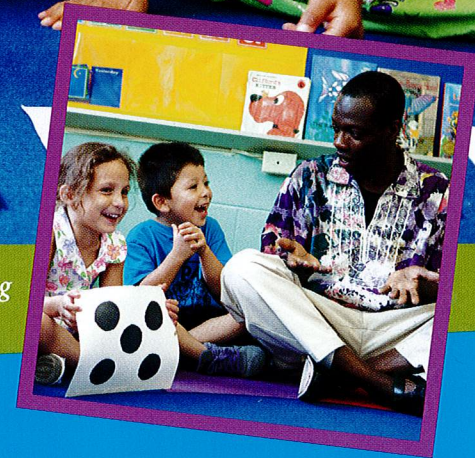
Make a real and lasting difference.

Hearing a steady drum beat. Making a leap. Acting out a story. Music is based on counting. Dance is creating shapes in space. Drama is all about problem solving.

As the new educational focus on STEM content takes hold in classrooms around the country, business leaders, lawmakers, policy makers, and educators acknowledge the importance of the early acquisition of STEM concepts. Through arts-based active learning experiences, teachers can guide even the youngest children to embody counting, spatial awareness, and patterns, establishing the foundations for math, engineering, science, and technology in later years.



Music and Math: A teacher partners with a Wolf Trap Teaching Artist to support math learning by posing problems in which children hear drumbeats and respond by identifying appropriate numbers and sets.



Wolf Trap Institute STEM programs address a national priority.

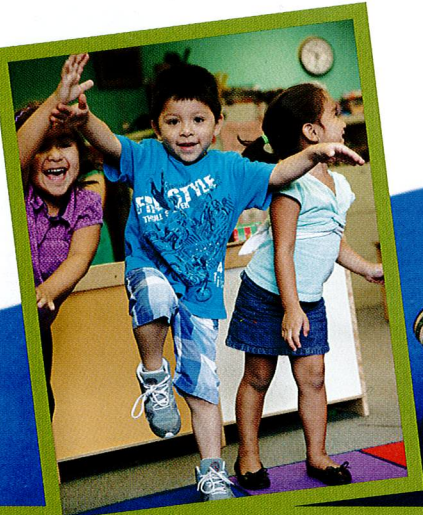
In 2010, with funding from the U.S. Department of Education through its Arts in Education Model Development and Dissemination Grant Program, the Wolf Trap Institute launched a four-year, \$1.15 million initiative focusing on early math learning through the arts in Fairfax County Public Schools (VA) PreK and Kindergarten classes.*

This multifaceted program is driven by Wolf Trap Teaching Artists leading classroom-based direct instruction for children embedded with arts-enhanced professional learning for teachers.

A rigorous independent evaluation by the American Institutes for Research will assess and document student achievement in math and the impact of Wolf Trap's coaching model on educators. The resulting evidence-based content and strategies form the basis of a national dissemination effort made possible through Wolf Trap's network of Regional Programs.

“Children whose imaginations are sparked by someone who reveals the possibilities of math or science tend to gravitate toward STEM-related interests. When this happens, that person is typically an inspiring teacher.”

— Rick Stephens, Senior Vice President,
Human Resources and Administration,
The Boeing Company Chairman,
Aerospace Industries Association Career
and Workforce Steering Committee



Dance and Math: A Wolf Trap Teaching Artist guides children to use improvised dance movements when music is playing. When the music stops, she rolls the die and the children use their bodies to demonstrate their acquisition of one-to-one correspondence skills.

Wolf Trap’s Early STEM/Arts programs are informed by experience in classrooms around the nation, and align with local and national standards and curricula, the National Research Council’s Committee on Early Childhood Mathematics and The National Academies’ current standard for High Quality Curricula and Instruction of Mathematics.

Significantly, Wolf Trap’s STEM programs for the early childhood education classroom have captured the attention of business and industry leaders who have long been involved in workforce development and education.

Professional development programs help educators develop strategies for active learning.

Children are eager, adventurous, and ready to learn. Educators want to master new ways to spark their enthusiasm, direct their energies, and give them the best possible start.

Wolf Trap’s arts-enhanced professional development programs are suitable for early childhood educators, administrators, childcare providers, special education and ESL/ELL specialists, and parents. They will learn effective ways to engage infants, toddlers, and children in active STEM learning: participatory, age-appropriate

experiences that involve all the senses and encourage critical thinking, creativity, communication, and collaboration.

These interactive, inspiring sessions will increase confidence in working with young children as participants learn how to make the natural connection between performing arts and children’s STEM learning. As one educator at a recent Wolf Trap STEM Summer Institute notes, “Math is everywhere. There are many ways to make connections to it. We just need to be intentional in our teaching.”



Dance and Math: Guided by a Wolf Trap Teaching Artist, children make shapes with classroom materials, demonstrating line and form, and straight and curved lines as they translate dance movements into geometric configurations.

**The arts make a difference in learning.
Wolf Trap makes a difference in education.**

The highly regarded Wolf Trap Institute model pairs performing artists with classroom teachers for multi-day classroom residencies. Every Teaching Artist is a recognized professional whose talent and passion for early childhood education infuse both the professional development experience and the classroom learning experience.

Working collaboratively alongside teachers, Teaching Artists educated in a comprehensive STEM program demonstrate developmentally appropriate and multisensory strategies and techniques that teachers model and immediately implement in their classrooms.

Since 1981 Wolf Trap Institute has been at the forefront of educational thinking and practice, setting the standard for best practices in the early childhood classroom that integrate arts-enhanced learning strategies into the curriculum, and providing professional development for early childhood educators.

Today Wolf Trap is addressing national STEM educational priorities with innovative programs that are changing educational practice for the better.

Discover how you can prepare children for successful, fulfilling lives in the 21st century.

Learn how to make
STEM learning count for more.

Visit www.wolftrap.org for
general information. To discuss your
particular needs, please contact us directly:

1-800-404-8461

703-255-1933

education@wolftrap.org

Music and Math: Children discriminate between “long” and “short,” exploring the relationship of both to music, math, and the science of sound.

Grounded in its intentional approach to math teaching, Wolf Trap provides innovative, effective arts-enhanced STEM services for teachers, children and families nationwide. Wolf Trap enables all educators to advance children’s learning with dynamic and age-appropriate experiences that engage young learners in the discovery processes integral to engineering, the sciences, and all disciplines while supporting their cognitive and emotional development.



Wolf Trap Institute Early Childhood STEM Learning Through the Arts Initiative

- 16-session and five-session classroom residencies
- Direct services for young learners
- Embedded professional development for teachers
- Lesson plans, supporting materials
- Parent workshops
- Full-day and half-day professional development workshops and multi-day institutes for early childhood educators
- Keynotes and conference presentations
- Research leading to nationally disseminated model for STEM learning



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**As of the 2011 allocation, the U.S. Department of Education Arts in Education Model Development and Dissemination Grant Program has awarded Wolf Trap Foundation \$576,733 in support of research and implementation of the Early Childhood STEM Learning Through the Arts project in collaboration with Fairfax County Public Schools (VA).*

Wolf Trap Institute STEM program services, including the U.S. Department of Education project, comprise a \$5.7 million effort over 5 years, and reach beyond the scope of the grant in both location and content.

The contents of this publication were developed under a grant from the U.S. Department of Education. However, those contents do not necessarily represent the policy of the U.S. Department of Education, therefore, endorsement by the Federal Government should not be assumed.

Wolf Trap Education is a program of the Wolf Trap Foundation for the Performing Arts. Wolf Trap Foundation is a 501(c)(3) nonprofit organization.

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