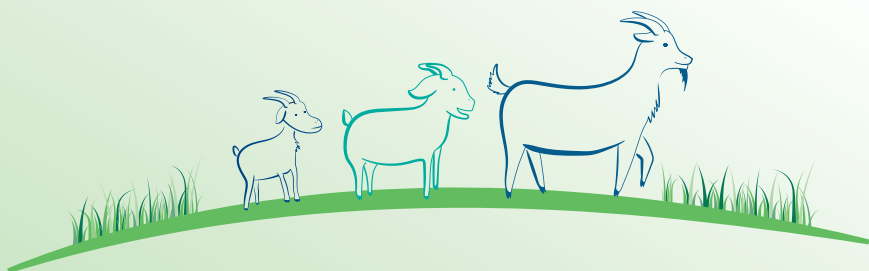


**WOLF TRAP FOUNDATION PRESENTS**  
A WOLF TRAP EARLY STEM/ARTS COMMISSION

# *Billy's Bridge*

PENNY RUSSELL



**WOLF  
TRAP**

INSTITUTE FOR  
EARLY LEARNING  
THROUGH THE ARTS



# ARTIST BIOGRAPHY

**Penny Russell** is a puppeteer, teacher, and performer based in the metropolitan D.C. area. She has worked as a writer, director, and performer with the Blue Sky Puppet Theatre since 1994. She has performed with GoodLife Theater at Wolf Trap, The Puppet Company at Glen Echo, Adventure Theatre, The Other Opera Company, and Bread & Puppet Theater. She facilitates puppetry workshops throughout the D.C./Baltimore region and beyond, serves as a Teaching Artist for the Wolf Trap Institute for Early Learning Through the Arts since 2010, and teaches music and puppetry to children and adults on the autism spectrum for ArtStream. Penny also sings with the Swing Set Trio and the Roland Cumberland Orchestra.

## ARTIST'S CREATIVE PROCESS FOR THIS PERFORMANCE

"I was inspired by my STEM work with Wolf Trap to focus on engineering and bridge building. I studied folklore in college, and bridge building immediately brought to mind *The Three Billy Goats Gruff*. What if we took the story back to a time before the bridge was built? Why would the goats want a bridge? What would they know about bridge building? How could this story explore the engineering method? The more I thought about connecting this story to engineering and young children, the more excited I became. Young children are, by their nature, engineers. They problem solve, plan, build, test, and redesign as part of their everyday play. I knew that the three billy goats could demonstrate this state of play.

I spent a summer on an island in Scotland, where I lived near a craggy hill covered with goats. I learned through research that *The Three Billy Goats Gruff* story has Norwegian origins, but I couldn't get Scotland - the look and the music - out of my head; so Scotland inspired the look and music of the production. I decided against setting the story in Scotland (with accents and cultural references) because I wanted to make sure the audience would strongly relate to the characters.

I wanted The Kid to represent the youngest child in a group (family, neighborhood, or school) who is a person of value with much to offer.

One of the first things I had to decide was what form of puppetry I would use to use to tell this story: shadow puppetry, rod puppetry, table top puppetry, finger puppetry, hand puppetry, marionettes. My first inclination was to use marionettes, but they proved too problematic in terms of staging and expression. I considered table top puppetry because I thought it was really important for the puppets to have weight. I wanted a scene in which the puppets tested the weight limits of their bridge. I again ran into the problem of expressiveness. I decided that hand puppets would be the most expressive option. I also knew that the puppets would need to use their hands, so moving-mouth hand puppets were not an option.

I want children to recognize their play as engineering-based; and to realize their great potential to solve problems and to think creatively."

- Penny Russell

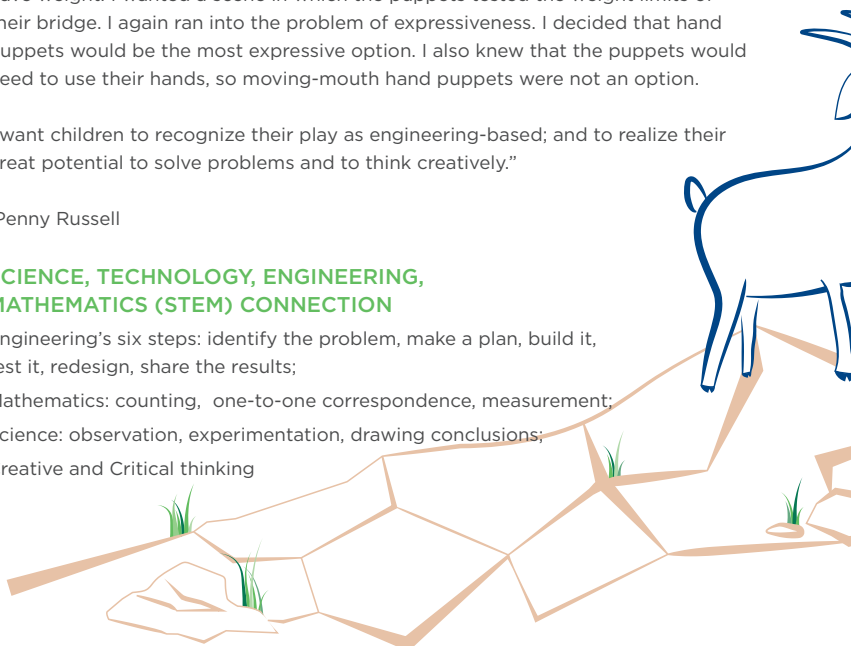
### SCIENCE, TECHNOLOGY, ENGINEERING, MATHEMATICS (STEM) CONNECTION

Engineering's six steps: identify the problem, make a plan, build it, test it, redesign, share the results;

Mathematics: counting, one-to-one correspondence, measurement;

Science: observation, experimentation, drawing conclusions;

Creative and Critical thinking



## FOR THE TEACHER...

### BEFORE THE PERFORMANCE

- Read several versions of the story, *The Three Billy Goats Gruff* (see Recommended Resources).
- Act out the story, using blocks or a set of steps as a bridge.

### AFTER THE PERFORMANCE

- Build bridges with classroom materials. Create bridges for different situations, adjusting for weight of cargo, width, span, high winds, etc.
- Visit bridges in your school neighborhood.
- Share pictures of bridges in the wider metropolitan area.
- Brainstorm other ways the goats could have made their way to the grass on the other side.
- Extend the story: What about the troll? What problems may he encounter?
- Use the Engineering Method to solve problems in your school.

## RECOMMENDED RESOURCES

### BOOKS

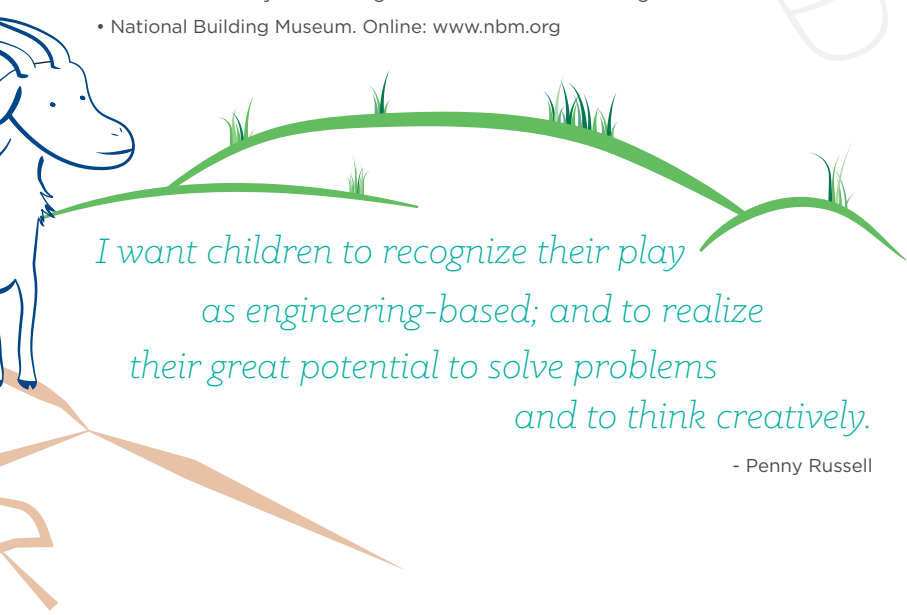
- Cousins, Lucy. *Yummy: Eight Favorite Fairy Tales*. Somerville, MA: Candlewick Press, 2009
- Galdone, Paul. *The Three Billy Goats Gruff*. New York, NY: Clarion Books, 1973
- Good, Keith. *Build It!* Minneapolis, MN: Lerner Publications Company, 1999
- Johmann, Carol A. and Elisabeth J. Rieth. *Bridges! Amazing Structures to Design, Build & Test*. Charlotte, VT: Williamson Publishing Co, 1999
- Krull, Kathleen. *Jim Henson: The Guy Who Played with Puppets*. New York, NY: Random House, Inc., 2011
- Rounds, Glen. *Three Billy Goats Gruff*. New York, NY: Holiday House, 1993

### CDs

- Bonnie Rideout. *Gi'me Elbow Room*. Maggie's Music, 1998. CD
- Rough Guide. *Rough Guide to Scottish Folk*. Rough Guide, 2001. CD

### WEBSITES

- American Society for Engineering Education. Online: [www.asee.org](http://www.asee.org)
- American Society of Civil Engineers. Online: [www.asce.org](http://www.asce.org)
- National Building Museum. Online: [www.nbm.org](http://www.nbm.org)



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## ABOUT THIS PERFORMANCE

Billy's Bridge is a short puppetry piece about Bill, Nan, and The Kid—three young goats. On this particular afternoon, The Kid builds towers from the rocks on the hillside, and Bill and Nan decide to find a way across the stream to get to the sweet grass on the other side. They learn a bit about the engineering method as they plan, build, test, and redesign to solve their problems.

## Small Bites!®

A unique arts experience modeled on an original program from the Arts Centre Melbourne, Australia.

## ABOUT WOLF TRAP INSTITUTE FOR EARLY LEARNING THROUGH THE ARTS

Research has proven that the arts are a powerful tool through which children can learn. Wolf Trap Institute for Early Learning Through the Arts was established in 1981 under a grant from Head Start, a program of the U.S. Department of Health and Human Services, to support teachers' professional development and young children's learning. Through residencies and workshops across the country, early childhood professionals in partnership with Wolf Trap Teaching Artists learn arts-based techniques and strategies that empower them to integrate the arts in all developmental domains of curriculum. Age-appropriate experiences in music, movement, drama, and puppetry foster a love of learning and help support young children's skill development in social relations, creative representation, initiative, logic, mathematics, language, literacy, movement, and music.

### WOLF TRAP INSTITUTE OFFERS A VARIETY OF SERVICES INCLUDING:

**Professional Development Workshops** for teachers that are designed to provide age-appropriate performing arts strategies that are linked to early childhood curricular learning outcomes.

**Family Involvement Workshops** offer parents and caregivers of young children an introduction to performing arts activities that can be employed at home, in the car, and even in line at the grocery store.

Wolf Trap Institute operates successful programs across the United States and has taken its services to nearly 100,000 children, educators, and parents/caregivers throughout 28 states.

For more information about Wolf Trap Institute for Early Learning Through the Arts, please visit: [www.Wolftrap.org/Education](http://www.Wolftrap.org/Education), or call 703.255.1933 or 1.800.404.8461.

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