

## PROGRAM

# Boomerangs Around the Room

## ARTIST NAME

Red Tie Variety with Ted Baumhauer, Ed.D.



### AVAILABLE FORMATS

- Performance
- Single Workshop
- Multi-Session  
Residency Workshop

### GRADE LEVELS

- Pre-K
- K – 2nd
- 3rd – 5th
- 6th – 8th
- 9th – 12th

### MAX NUMBER OF PARTICIPANTS

In-Person: 300  
Virtual: N/A

### PROGRAM LENGTH

45 minutes

## PROGRAM DESCRIPTION

The Boomerangs Around the Room show is built on the principles of gyroscopic stability, precession, and aerodynamics. These concepts are presented through comedy and good humor to make them accessible to students. Skills utilized to present these concepts include: spinning tops, frisbees, foam airplane, beach ball, leaf blower and boomerangs.

## CURRICULUM STANDARDS

This program supports these NYS or Next Generation Learning Standards:

1. Develop explanations of natural phenomena in a continuing, creative process.
2. 1.1 Ask “why?” questions to seek understanding of observed objects and events. 1.1b Articulate appropriate questions based on observations.
3. 1.2 Question explanations, seeking clarification.
4. 1.3 Form your own explanations based on observation and analysis.

Contact Arts for Learning WNY for more information.  
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## EDUCATIONAL OBJECTIVES

Explore aerodynamic lift, gyroscopic precession, The Coanda Effect and the Bernoulli Principle Predict the outcome of Coanda Effect experiments

Gain an understanding of aerodynamic lift and how a plane can fly

Understand how a top can balance when it is spinning and how that helps a boomerang return.

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## LOGISTICS/EQUIPMENT

Please Provide: 20' x 15' stage or open performing space, 12' high ceiling, 110 v electrical outlet Please Expect: 20 minutes set up and break down time. Performer can and will provide his own PA system Workshop: Typical Classroom is fine, 1 cereal box (cardboard) for each student, pencil, scissors

## VOCABULARY

**Vacuum** A space devoid of matter

**Aerodynamic lift** the component of the aerodynamic forces acting on an airfoil that opposes gravity. synonyms: lift. types: ground effect. apparent increase in aerodynamic lift experienced by an aircraft flying close to the ground.

**Gyroscopic precession** Torque-induced. Torque-induced precession (gyroscopic precession) is the phenomenon in which the axis of a spinning object (e.g., a gyroscope) describes a cone in space when an external torque is applied to it. The phenomenon is commonly seen in a spinning toy top, but all rotating objects can undergo precession.

**Gravity** gravity, also called gravitation, in mechanics, the universal force of attraction acting between all matter. It is by far the weakest known force in nature

**Velocity** the speed of something in a given direction.

## POST-PROGRAM ACTIVITIES & RESOURCES

Discussion topics: Air pressure, aerodynamic lift, gyroscopes, how a boomerang flies and returns, how can a heavier than air object fly?

Books to read: 365 Super Science Experiments with everyday materials; Simple Science Experiments with Everyday Materials by Muriel Mandell; Chemical Magic by Leonard A. Ford.

Projects: Levitating with a hair dryer, make boomerangs, whirlybirds, or paper airplanes. Airbag balancing act, balloon shuttlecraft.



### ARTIST BIO

Ted Baumhauer, Ed.D., (Red Tie Variety) is also an award winning performer (Best Magic/Variety/Circus Act 2020 Tucson Fringe Festival) and juggler (5 ball endurance & best trick at the 2004 Cornell University Juggling Festival). He has been performing family shows since 1994 ranging from Arizona to Vermont.

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