

SUPER SCIENTIFIC CIRCUS

Starring: MR. FISH & TRENT ARTERBERRY

STUDY GUIDE

NATURE AND PURPOSE

Super Scientific Circus helps students realize that science is interesting, fun and something they can understand and use.

The performance demonstrates seemingly impossible circus or theatrical tricks that actually have scientific explanations. Using student volunteers, we show students:

- *You cannot crush an egg in your hand!
- *You can make and throw your own BOOMERANGS!
- *You can pull a tablecloth out from under a person sitting on a chair, without even disturbing the person or the chair!
- *You can see different wavelengths of light and how they affect the way we see.
- *You can actually enjoy and use science!

These and many more effects are demonstrated in a lively, fun and entertaining way.

THE PERFORMERS

Mr. Fish (A.K.A. John James Lepiarz) is a long-time circus performer. He toured for seven years with The Big Apple Circus and has been featured on national television on both HBO and ABC circus specials. John was awarded First Prize in Clowning at the 1990 International Circus Festival. Fluent in both French and Spanish, John graduated from Oberlin College and is a father of three.

Trent Arterberry is an internationally traveled mime artist who has played in thousands of schools, festivals and theatres. Trent has toured with such greats as B. B. King and Julio Iglesias. Trent was the subject of an Emmy-nominated news feature and was named Performing Artist of the Year by the National Association of Campus Activities (NACA).

Their other 2-man show, "The Funny Stuff Circus," has toured around the world including Hong Kong, Singapore and Taiwan.

VOCABULARY WORDS

Gravity - The downward pull on all objects toward the center of Earth.

Friction - The resistance of motion of surfaces that touch. This is the force that pushes against a moving object, causing it to stop moving.

Inertia – The resistance that an object has to having its motion changed. Stationary objects continue to stay at rest. Moving objects continue to move in the same direction until friction stops them.

Centrifugal Force – An anti-gravitational force that is created when an object is spinning, causing the object to tend to move away from the center.

Speed of Sound – Sound travels at a rate of 761 miles per hour or 1,100 feet per second, or 1,225 kilometers per hour.

Sonic Boom – The sound that is created when an object travels faster than the speed of sound.

Aerodynamics – The study of flight through the air.

Velocity – The speed at which an object travels.

Air Pressure – The amount of force that the atmosphere exerts upon all objects. Normal air pressure on earth is 15 pounds per square inch.

Arch – A semi-oval structure. Arches can be seen in bridges, churches or the Roman Coliseum.

READING

Physics for Every Kid by Janice Van Cleve, published by John Wiley & Sons.

101 easy experiments in motion, light, heat, machines and sound. She is the author of 10 books, all of which teach science to children.

Subjects range from magnets to microscopes, geography to astronomy and many are written specifically to aid students in their work on science projects.

PRE-SHOW ACTIVITIES

Suggestions for grades K-5:

- a. Drop things on the floor and discuss GRAVITY.
- b. Rub their hands together to feel FRICTION, then wash their hands with soap and water to see FRICTION diminished.

- c. Blow bubbles and talk about AIR PRESSURE. A bubble shows you what that looks like.
- d. Blow up a balloon and see how much AIR PRESSURE you can put inside.
- e. Look for ARCHES. Find pictures of ARCHES.
- f. Make a list of all the animals that lay EGGS.

POST-SHOW ACTIVITIES

1. BUBBLES – Bubbles can be made by mixing 1 cup of Dawn or Joy dishwashing liquid with 3 or 4 cups water. Dip your hands in the bubble solution and you can hold bubbles in your hand. You can make your own bubble wands out of coat hangers or light gauge wire. THIS DEMONSTRATES AIR PRESSURE.
2. BOOMERANGS – Boomerangs can be made from a Pizza Box. Take a 12” rule and trace around it. Then turn it perpendicular and trace around it at the middle of the first tracing. You will have a symmetrical cross. Cut it out. Round off the tips and bend them slightly. Throw them outdoors with the blade of the boomerangs pointing straight up. Throw it like a baseball without letting the blades turn parallel to the ground. Practice. THIS DEMONSTRATES AIRSPEED, AERODYNAMICS, AND AIR PRESSURE.
3. EGGS – Place an egg in the palm of your hand. Wrap your fingers around it. Keep your thumb extended. Squeeze as hard as you can. The egg will not break, unless it already has a small crack in it. THIS DEMONSTRATES THE POWER OF THE STRUCTURE OF THE ARCH.
4. FLIGHT – Take a hair dryer and ping pong ball. Hold the hair dryer pointing up. Turn it on. Place the ping pong ball in the air stream. It will float and fly. THIS DEMONSTRATES AIR SPEED, AERODYNAMICS, AND FLIGHT.
5. CENTRIFUGAL FORCE – Punch 2 holes near the top of a plastic cup. Run two feet of strong string or wire through the holes, making a long handle. Tie the two ends together. Practice spinning the cup. Put water in the cup. Spin the cup with water in it. If you keep it spinning smoothly, the water will not spill out. THIS DEMONSTRATES CENTRIFUGAL FORCE.