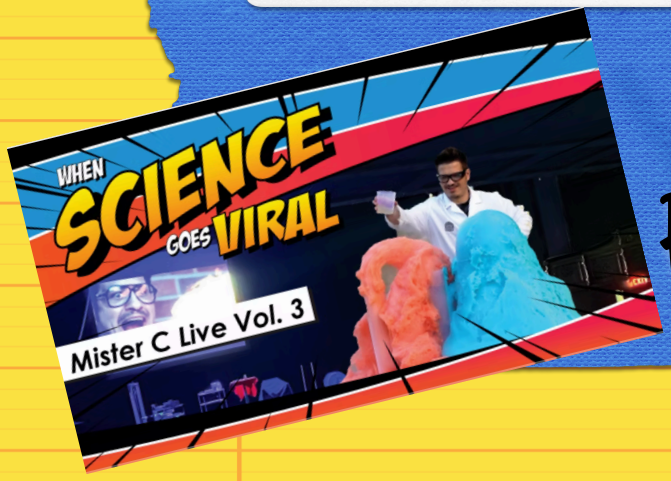
Bill Edwards

FOUNDATION FOR THE ARTS

Youth Educational Programs



TEACHER RESOURCE GUIDE

2025/26

MISTER C LIVE. Vol. 3

☑ November 19, 2025

☑ Duke Energy Center for the Arts - Mahaffey Theater

ClassActs

SYNOPSIS

Join Mister C in the lab for another amazing day of learning as he attempts the world's coolest and most popular experiments with YOU, his science crew!! Jumbo centripetal force boards, on-stage mentos geysers, GIANT elephant toothpaste and so many more experiments will transform how students, parents and teachers feel about learning science! Mister C's positive attitude, his love for science and his passion for creating media makes this show fun for learners of all ages. Warning: Attendees may experience laughter, learning and a love for science! Combining Mister C's love of science and making epic videos is sure to create an amazingly fun learning adventure that encourages exploration, curiosity and even failure! From chemical reactions, kitchen concoctions, and DIY rockets, Mister C uses humor, media and the engineering design process to make the ordinary extraordinary.

Mister C is a regional Emmy Award winning producer for his show DIY Science Time which airs on PBS stations across the country! He is a 15-time Telly Award winner for DIY Science Time and he's also a 4-time regional Emmy nominated host for Full STEAM Ahead.

ALL ABOUT MISTER C LIVE

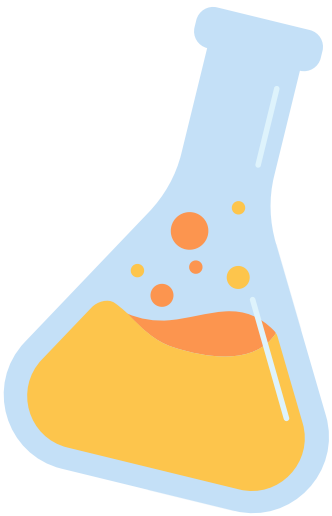
Are you ready for some hair-raising science, toe-tapping music and mind-blowing media? Join Mister C for an amazing day of learning in the lab as he explores all things air! Mister C is no stranger to finding exciting and engaging ways to explore STEAM (Science, Technology, Engineering, Art, and Math) in our everyday lives. Liquid Nitrogen, t-shirt cannons, toilet paper and ping pong ball launchers and much much more in this STEAM powered show! Mister C is a 20 year educator whose sole mission is to transform how everyone feels and thinks about learning. Students and teachers will be amazed with this fun and educational series as Mister C uses humor, media and the engineering design process to make the ordinary EXTRAordinary!

Learn more about Mister C Live on his YouTube channel
https://youtube.com/@learningscienceisfun?si=z8wZsi_eF8duotVf
https://youtu.be/5IMNmIg8fD4?si=OREwTJTbmjR06fgG

MEET THE CREATORS

Heather's a 3-time regional Emmy Award winning producer and has an eye for creativity which can be found in the videos and media she produces for Mister C's programming. She's a communications major from WSU and is responsible for marketing, social media, and website development for all of Mister C's platforms.

Kevin, aka Mister C, has been an educator for 20+ years and loves to make learning fun for everyone. He uses music and media to create educational curriculum to support students of all ages. Kevin is a 3-time regional Emmy award winning producer for his educational shows.



STANDARDS ALIGNMENT SUMMARY

Activity	Relevant Standard	Why it Aligns
Elephant Toothpaste" (Chemical Reaction)	SC.5.P.8.1 (Investigate & explain physical or chemical changes)	Students observe a chemical change—hydrogen peroxide decomposing, gas released, foam produced.
Super Slime" (Polymers / Chemical Reaction)	SC.5.P.8.1 & SC.5.P.8.2 (distinguish physical vs chemical change)	The slime experiment shows new substance formation (polymerization) and change in properties.
Magnetic Slime	SC.6.P.11.1 (Explain magnetic properties & fields)	This uses magnetism and material interactions.
Balloon Rocket Race	SC.4.P.10.1 (Explain forces & motion) or SC.6.P.10.1 (Forces cause change in motion)	This experiment uses Newton's 3rd law and demonstrates force & motion.
Rainbow Density Tower	SC.5.P.11.2 (Explain how density affects buoyancy) or SC.8.P.10.2 (Density & pressure)	Students see layering based on density differences.
Color-Changing Milk	SC.5.P.8.1 & SC.5.P.8.2	It demonstrates chemical reactions (soap interacting with fat) and change in properties.
Paper Bridge Challenge (Engineering Design Process	SC.3-5.N.1 (Nature of Science: Engineering Design) / SC.6-8.N.1	Aligns to nature of science/engineering: identify problem, design solution, test & improve.

LAB SAFETY GUIDELINES

- Always follow **Science Safety** procedures.
- Report **all accidents, injuries, and equipment breakage** immediately.
- Keep **pathways clear** — store bags and materials under tables.
- Tie back **long hair** to prevent contact with flames or chemicals.
- Leave your **workstation clean** after each experiment.
- Know the **location of safety equipment** (fire extinguisher, eye wash, first aid kit, safety shower).
- **Walk calmly** in the lab—no running or roughhousing.

THE ENGINEERING DESIGN PROCESS (EDP)

The **Engineering Design Process** is a *flexible cycle* used by both engineers and students. There's **no single starting or ending point**—you can jump in anywhere in the process!

Steps of the EDP:

1. **Dilemma:** Identify the problem. What's been tried before? What are the constraints?
2. **Ask Questions:** Brainstorm possible solutions alone or in groups. Choose one idea to test.
3. **Make a Plan:** Draw your design and list materials needed.
4. **Create & Design:** Build your prototype.
5. **Test & Redesign:** Evaluate what works and what doesn't. Improve and test again.
6. **Find a Solution:** Continue refining until the best solution is achieved.

ELEPHANT TOOTHPASTE

Fun Fact:

Seaweed is in our toothpaste! It acts as a thickening agent so toothpaste can be squeezed from the tube.

Materials:
- Yeast
- Dish soap
- Measuring spoons
- Empty plastic bottle
- Cup with warm water
- 3% Hydrogen peroxide

Procedure
1. Gather materials.
2. Mix 2 tbsp yeast with 3 oz warm water and let sit for ~3 minutes.
3. Pour 4 oz hydrogen peroxide into an empty bottle.
4. Add 1 tbsp dish soap.
5. Pour in the yeast mixture.
6. Observe the foamy reaction!

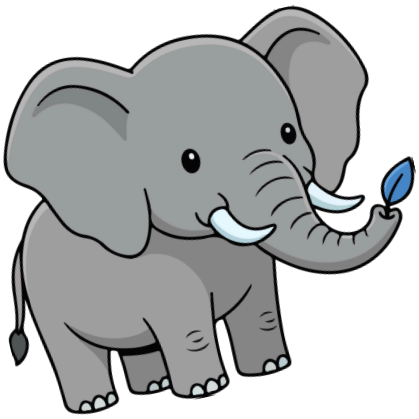
Why It Works

Hydrogen peroxide (H_2O_2) naturally decomposes into water (H_2O) and oxygen (O_2).
Yeast contains the enzyme catalase, which speeds up this reaction. The soap traps oxygen bubbles, forming a foamy "toothpaste" that looks like it's fit for an elephant!

Extend Your Learning
- What happens if you add more yeast?
- What if you skip the soap?
- Does the bottle's shape affect the foam's flow?

Workforce Connection

Cosmetologists use chemical reactions when coloring hair.
Bleaching triggers an irreversible reaction that removes pigment (melanin), preparing hair for recoloring.



SUPER SLIME

Fun Fact:

Slime was first sold as a toy in 1976! It's a non-Newtonian fluid, meaning it behaves like both a liquid and a solid.

Materials:
- Glue (8 oz)
- Baking soda (½ tbsp)
- Contact solution (1½ tbsp)
- Food coloring (optional)
- Measuring spoons and mixing bowl

Procedure
1. Pour 8 oz glue into a bowl.
2. Add ½ tbsp baking soda and mix.
3. Add food coloring (optional).
4. Add 1½ tbsp contact solution and stir until slime forms.
5. Adjust with more contact solution if needed.

Why It Works

Glue is a polymer — a long chain of repeating molecules.
The borate ions in contact solution act like links, causing the glue molecules to connect and form a new substance. The result is a stretchy, bouncy slime formed through a chemical change.

Extend Your Learning
- What happens if you double the contact solution?
- Do clear and colored glue behave differently?
- What happens when slime is chilled or heated?
- Can you design your own slime recipe?

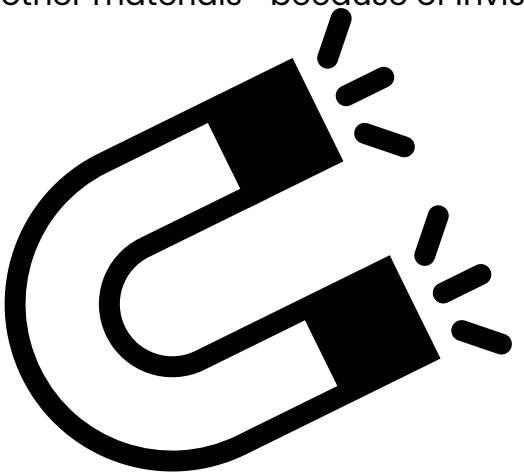
Workforce Connection

Chemical engineers design and test materials like fuels, plastics, and medicine. They use their understanding of chemical processes to improve products and systems in industries from food to environmental protection.

MAGNETIC SLIME

Fun Fact

Magnets can attract certain metals—even through other materials—because of invisible magnetic fields!



Materials

- Prepared slime (from Super Slime activity)
- Iron filings or fine steel wool shavings
- Strong magnet
- Plastic gloves (optional)

Procedure

1. Mix a tablespoon of iron filings into your slime.
2. Knead until evenly distributed.
3. Hold a magnet near the slime—watch it move and stretch!
4. Try different magnet strengths and distances.

Why It Works

The iron filings inside the slime respond to the magnetic field around the magnet. The flexible polymer lets the particles slide, making the slime "creep" toward the magnet.

Extend Your Learning

- What happens with stronger or weaker magnets?
- Does the slime's thickness affect movement speed?
- Can you make a maze for the slime to follow?

Workforce Connection

Material scientists use magnetic polymers in robotics and biomedical devices like targeted drug delivery capsules.

BALLOON ROCKET RACE

Fun Fact

Rockets fly using Newton's Third Law: For every action, there is an equal and opposite reaction.

Materials

- String (10–15 ft)
- Drinking straw
- Tape
- Balloon
- Two chairs

Procedure

1. Thread string through the straw and tie each end to a chair, keeping it taut.
2. Blow up the balloon (don't tie it) and tape it to the straw.
3. Let go of the balloon and watch it race!

Why It Works

Air rushing out of the balloon pushes the balloon forward—just like a rocket engine expelling exhaust gases.

Extend Your Learning

- How does balloon size change speed or distance?
- Can you design a "rocket nose cone" for stability?
- Measure distance to compare data and graph results.

Workforce Connection

Aerospace engineers apply physics and fluid dynamics to design rockets, planes, and drones.

RAINBOW DENSITY TOWER

Fun Fact

Liquids can layer because each has a different density—how tightly packed its molecules are.

Materials

- Tall, clear glass or cylinder
- Food coloring
- Honey, dish soap, water, vegetable oil, rubbing alcohol (or other household liquids)
- Dropper or spoon

Procedure

1. Add each colored liquid slowly to the glass in this order: honey → dish soap → colored water → vegetable oil → rubbing alcohol.
2. Observe how layers stack up!
3. Drop in small objects (paperclip, grape, bead) to see where they settle.

Why It Works

Each liquid's density causes it to sink below or float above others. Molecules in denser substances are packed closer together.

Extend Your Learning

- Try different liquids—can you predict their order?
- How do temperature or sugar content affect density?

Workforce Connection

Chemical and environmental engineers use density principles to separate substances in recycling and wastewater treatment.

Skills

COLOR-CHANGING MILK

Fun Fact

Surface tension keeps the surface of a liquid intact—until soap comes along!

Materials

- Whole milk (in a shallow dish)
- Food coloring
- Dish soap
- Cotton swab

Procedure

1. Pour milk into the dish—just enough to cover the bottom.
2. Add drops of food coloring around the milk.
3. Dip a cotton swab in dish soap and touch the milk's surface.
4. Watch the colors dance and swirl!

Why It Works

Soap molecules break surface tension and attach to fat molecules, causing colorful motion as the soap spreads and reacts with the milk's fat.

Extend Your Learning

- Compare results using whole, 2%, and skim milk.
- What happens if you use cream or plant-based milk?

Workforce Connection

Food scientists study emulsions and surface tension to make products like creamy dressings, ice cream, and cosmetics.

PAPER BRIDGE CHALLENGE

Fun Fact

Engineers rely on structure and geometry to build strong bridges—even with light materials!

Materials

- Printer paper
- Pennies or washers (for testing weight)
- Books or boxes (bridge supports)
- Tape and scissors

Procedure

1. Create different bridge designs: flat strip, folded accordion, or rolled tube.
2. Place each bridge between two supports.
3. Test how many pennies each can hold before collapsing.
4. Record and compare your data.

Why It Works

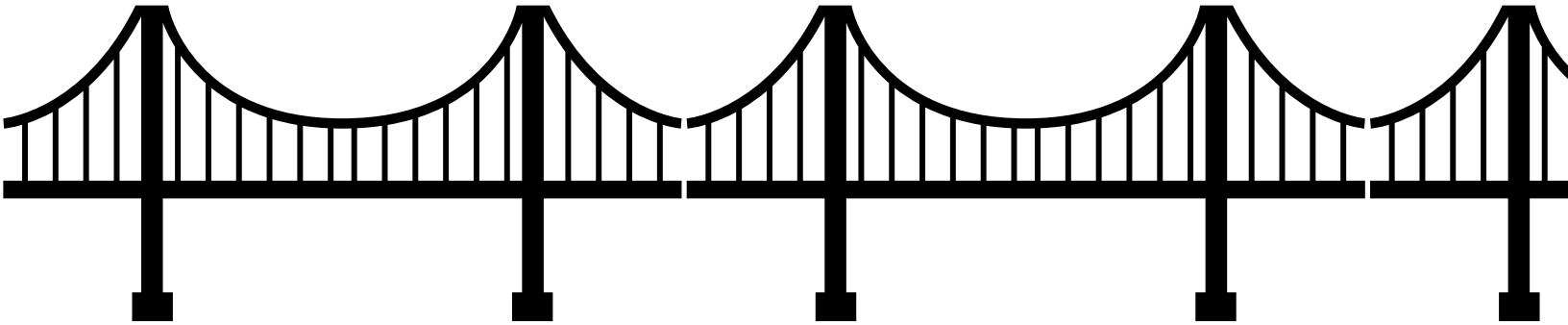
Changing paper shape redistributes force. Curves, folds, and triangles increase strength through structural engineering principles.

Extend Your Learning

- How does paper length affect strength?
- Can you design a bridge that holds the most weight using only one sheet?

Workforce Connection

Civil and structural engineers use math, materials science, and design to build safe bridges, skyscrapers, and roads.



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BE A STAR AUDIENCE!

Going to the theater is different from watching a movie or a YouTube video — it's LIVE! That means the actors, dancers, and musicians can see and hear you.

Here's how to help make the show magical:

★ **SIT SMART**
Stay in your seat with both feet on the floor. Lean in and watch — the best view is when everyone is still.

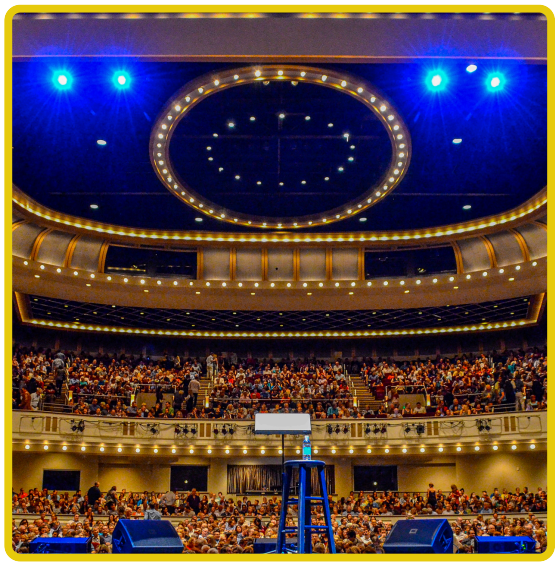
★ **TALK LESS, LISTEN MORE**
Save your thoughts for after the show. Even whispers can distract the performers and your classmates.

★ **APPLAUD LIKE A PRO**
Clap when the show begins, after songs or dances, and at the end. Performers love your energy!

★ **NO SCREENS, NO SNACKS**
Phones, tablets, candy wrappers — all of these take away from the live magic. Keep them put away.

★ **RESPECT THE SPACE**
The Mahaffey Theater is a special place. Treat the seats, aisles, and stage with care.

★ **ENJOY THE EXPERIENCE**
Laugh, clap, gasp — just do it at the right times. Being part of the audience is half the fun!



LIVE PERFORMANCES

Imagine sitting in a giant theater as the lights dim and the curtain rises. Suddenly, the stage bursts into life with actors, dancers, and musicians performing right in front of you. That's what makes live theater so special — it's happening right now, and every performance is a little different. Through Class Acts, you'll see stories connected to your school subjects come alive on stage, from history and science to literature and music. You'll laugh, clap, and maybe even learn something new along the way!

BAM! FESTIVALS

BAM! is more than a field trip — it's a hands-on adventure in the arts. Instead of just watching, you'll get to do. Students rotate through stations like drumming circles, theater games, dance workshops, and art projects. One moment you might be painting, the next you're learning choreography or acting out a scene with friends. Each festival has a different theme, but every BAM! day is packed with creativity, fun, and discovery.

SUMMER CAMP

Not every student can easily get to the theater, so we make sure the arts reach everyone. Every summer, the Mahaffey Theater transforms into a Broadway-style training ground for kids and teens. Over three weeks, campers learn singing, dancing, acting, and even behind-the-scenes skills like stagecraft and costume design. The experience ends with a full-scale production on the Mahaffey stage — lights, microphones, costumes, and all! It's more than camp; it's a chance to build confidence, make friends, and shine in the spotlight.

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Questions?

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ClassActs

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