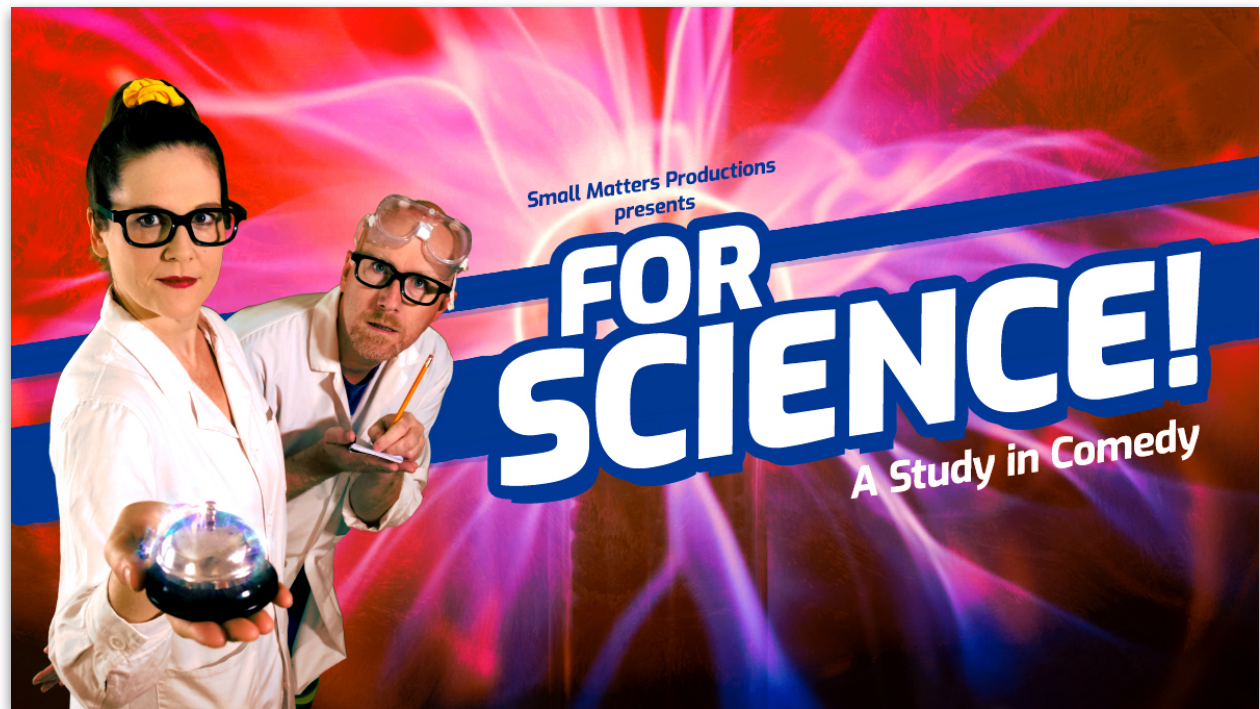


FOR SCIENCE! Study Guide



the performance.

FOR SCIENCE! is Bill Nye the Science Guy meets Blue Man Group in an absurd investigation of instant gratification and celebration of the scientific method for ages 10 to adult.

In this 55-minute, The Professor and The Lab Assistant invite audience members to come on-stage to complete simple “experiments”. The tasks get harder and harder until eventually many people need to work together to complete the goal.

The production uses non-speaking, clown performance to examine how different people feel impulses differently. We encourage empathy through action, evoke wonder and surprise, collaboration and cooperation, and to laugh at our own natural silliness.

READ more about the show: www.smallmatters.ca/shows/for-science/

WATCH the trailer on YouTube: www.youtube.com/watch?v=b6huAlw98os&t

lead artists.

Small Matters Productions creates and makes their home in amiskwacîwâskahikan, known as Edmonton, Alberta, Canada, on Treaty 6 Territory and Métis District 10.

Christine Lesiak (she/her) - The Professor, lead creator

Christine has a BSc. in Physics, and a Masters of Fine Arts in Drama. She has co-created and performed in nine original shows with her company, Small Matters Productions. She also teaches and directs clown, physical comedy, and interactive performance shows. She is passionate about both art and science, and uses comedy to make learning hilarious.



Ian Walker (he/him) - The Lab Assistant, co-creator

Originally from Yorkshire, England, Ian is an innovative theatre collaborator, problem solver, and professional engineer and mechanical designer with over 30 years experience in and structural and automation design. He builds special effects and tricks for theatre and film. He is a filmmaker and film editor, and loves working on film sets when he's not hopping around doing **SCIENCE!**

other artist credits.

Consulting director: Deanna Fleyscher

Software designer: Adrian MacKenzie

Video design: Navras Kamal

Music consultants: Chase Padgett & Leif Ingebrigtsen

Performance consultant: Jan Henderson

pre-performance discussion

FOR SCIENCE! is an interactive show. That means we make the show with you, the audience. You are invited to participate in the show if you want. This is a different from many live performances where you are asked to sit quietly until the end.

What does it mean to be a positive audience member in an interactive show?

- You can laugh out loud and clap whenever you feel like it, and respond to the performers when they interact with you.
- Listen to The Professor and The Lab Assistant. They will make it clear what they want you to do. If you're not sure, ask.
- Cheer for the volunteers! It can be scary to be onstage and some of the experiments are **hard**. Let them know you've got their backs!
- Share the stage. Make space for others to participate.
- Remember, you can "un-volunteer" and choose to leave the stage and go back to your seat at any time.
- Be aware that some of the experiments need an older/taller person or maybe even an adult to volunteer. The Professor will make this clear when this is.

curriculum connections.

Social Studies

- **Nonverbal communication** - transition of messages or signals without using words. This includes gestures, eye contact, body language, tone of voice, touch, social distance. Studies suggest that two-thirds of communications are nonverbal. We use emojis in written messages to replace nonverbal cues.
- **Empathy building** - the ability to sense other people's emotions, and to imagine what they are thinking and feeling, and imagine yourself in their place.
- **Collaboration & cooperation** - working together and all contributing to complete a task or create something.
- **Impulse (sociobiology)** - A sudden, strong urge to do something without thinking.
- **Operant conditioning/instrumental conditioning and positive reinforcement** - B.F. Skinner's theory of learning that states that a behaviour is influenced by its consequences. Reinforced or rewarded behaviour will likely be repeated, and behaviour that is punished or is not rewarded is less likely to be repeated.

Physics

- **Kinematics, projectile motion** - Galileo's model of the type of parabolic motion experienced by an object thrown through the air, subject to gravity. A foam dart shot from a Nerf gun experiences projectile motion.
- **Impulse (physics)** - As related to Newton's second law of motion; the change of momentum of an object over time, where momentum is mass times velocity. When a Nerf dart hits a cup, both objects experience an impulse.
- **Resonance of open-end air columns & standing waves** - sound-creating (musical) instrument made of a tube that is open on both ends. The wavelength of the standing wave depends the length of the tube and if the end are open or closed. The wavelength determines the pitch of the sound we hear.
- **Propagation of sound through air** - we hear the ding of a bell because of invisible pressure waves that travel through in the air (propagate), created by the vibrating bell. The pressure waves hit our ear drums and our brains interpret the vibrations as sound.

Arts education

- **Clown theatre and non-verbal performance** - There are many types of clowns. The performers in *FOR SCIENCE!* are modern theatre clowns. Theatrical clowning is a character-oriented performance, where the comedy comes from the characters not fitting into normal society and structures. Clowns embrace failure, are inventive, curious, playful, and genuine.
- **Music** - Tuned percussion tubes and pitch. Listening to rhythm and working as a musical ensemble.

post-performance questions.

- What did you like about the show?
- Did you have any favourite experiments?
- Did you get up to do an experiment? Why or why not?
- Did you want to get up to do an experiment, but didn't? Why or why not?
- What nonverbal cues let you know what you were supposed to do?
- When did you see examples of positive reinforcement?
- When did you see physics in action?
- Have you ever seen a clown perform before? How were they similar or different from the clowns in *FOR SCIENCE!?*