2025/26

OVERTURE CENTER FOR THE ARTS

ONSTAGE STUDENT FIELD TRIP

RESOURCE GUIDE

Secrets of Space

overture.org/onstage

Overture
CENTER FOR THE ARTS

ABOUT OVERTURE CENTER FOR THE ARTS

Overture Center for the Arts fills a city block in downtown Madison with world-class venues for the performing and visual arts. Made possible by an extraordinary gift from Madison businessman W. Jerome Frautschi, the center presents the highest-quality arts and entertainment programming in a wide variety of disciplines for diverse audiences. Offerings include performances by acclaimed classical, jazz, pop, and folk performers; touring Broadway musicals; quality children's entertainment; and world-class ballet, modern and jazz dance. Overture Center's extensive outreach and educational programs serve thousands of Madison-area residents annually, including youth, older adults, people with limited financial resources and people with disabilities. The center is also home to ten independent resident organizations.

RESIDENT ORGANIZATIONS

Bach Dancing and Dynamite Society
Children's Theater of Madison
Forward Theater Company
Kanopy Dance Company
Li Chiao-Ping Dance Company
Madison Ballet
Madison Opera
Madison Symphony Orchestra
Wisconsin Academy's James Watrous Gallery
Wisconsin Chamber Orchestra

Internationally renowned architect Cesar Pelli designed the center to provide the best possible environment for artists and audiences, as well as to complement Madison's urban environment. Performance spaces range from the spectacular 2,250-seat Overture Hall to the casual and intimate Rotunda Stage. The renovated Capitol Theater seats approximately 1,110, and The Playhouse seats 350. In addition, three multi-purpose spaces provide flexible performance, meeting and rehearsal facilities. Overture Center also features several art exhibit spaces. Overture Galleries I, II and III display works by Dane County artists. The Playhouse Gallery features regional artists with an emphasis on collaborations with local organizations. The Wisconsin Academy of Sciences, Arts and Letters' Watrous Gallery displays works by Wisconsin artists, and the Madison Museum of Contemporary Art offers works by national and international artists.

Dear Teachers,

In this resource guide you will find valuable information that will help you apply your academic goals to your students' performance experience. We have included suggestions for activities which can help you prepare students to see this performance, ideas for follow-up activities, and additional resources you can access on the web. Along with these activities and resources, we've also included the applicable Wisconsin Academic Standards in order to help you align the experience with your curriculum requirements.

This Educator's Resource Guide for this OnStage presentation of ***Secrets of Space*** is designed to:

• Extend the scholastic impact of the performance by providing discussion ideas, activities and further reading which promote learning across the curriculum;

• Promote arts literacy by expanding students' knowledge of music, science, storytelling and theatre;

• Illustrate that the arts are a legacy reflecting the values, custom, beliefs, expressions and reflections of a culture;

• Use the arts to teach about the cultures of other people and to celebrate students' own heritage through self-reflection;

• Maximize students' enjoyment and appreciation of the performance.

We hope this performance and the suggestions in this resource guide will provide you and your students opportunities to apply art learning in your curricula, expanding it in new and enriching ways.

Enjoy the Show!

We Want Your Feedback!

OnStage performances can be evaluated online! Evaluations are vital to the future and funding of this program. Your feedback educates us about the ways the program is utilized and we often implement your suggestions.

Follow this link: https://form.jotform.com/252614119409152

and fill out an evaluation. We look forward to hearing from you.

Education Categories

Language Arts Social Emotional Science

Photo courtesy of Secrets of Space

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Photo courtesy of Secrets of Space

About Secrets of Space

The night sky has ignited imaginations for millennia, from twinkling stars to fiery comets to our neighborly moon. Although humans today know far more about the makeup and movements of these celestial bodies than our ancestors did when they named constellations, the magic and allure of space remain.

Secrets of Space, a production from Cahoots NI (from Northern Ireland), celebrates the mystery and excitement of space, with the story of Suni and Mae. These two young sisters dream of exploring outer space and singing among the stars.

With the aid of magical illusions and a state-of-the-art digital LED wall, ***Secrets of Space*** takes Suni, Mae, and the audience on an interactive journey across the galaxy.

Cahoots NI collaborated with leading space industry experts to develop ***Secrets of Space***. The show is chock-full of key ideas and inventions in science, technology, and engineering.

Secrets of Space is performed by just two actors. It was directed by Paul Bosco Mc Eneaney and written by Charles Wray, with music composed by Aoife Kavanagh, set design by David Morgan, costume design by Dianna Ennis, illusion design by Guy Barrett, Helen Foan as puppetry director, and Peter J. McCauley as musical director.

Please be advised that this production makes use of bright lights, digital media, and flashing or strobe effects. These elements may affect individuals with photosensitivity or other light sensitivities.

About Cahoots NI

Photo courtesy of Secrets of Space

Cahoots NI, the company behind Secrets of Space, was founded in 2001 by Paul Bosco Mc Eneaney and Zoe Seaton to raise the profile of theater for children in Northern Ireland. The company's performance style combines multiple genres, including scripted theater, non-verbal work, musicals, dance, circus arts, magic, and illusion.

Based in Northern Ireland, the company works out of an abandoned warehouse in Belfast they have transformed into a magical world brimming with wonder and imagination. Cahoots NI also tours around the world, including North America, South Korea, Malta, Japan, Germany, Norway, and China. The company has developed dozens of productions over the years, based on original stories, favorite books, and their favorite (and least favorite) subjects in school.

Photo courtesy of Secrets of Space

Words to Unlock the *Secrets of Space*

Useful vocabulary from the Cahoots NI Study Guide

Word	Definition
Atmosphere	The gases held by gravity around Earth and around other planets.
Black Hole	A place in space where matter and light cannot escape if they fall in.
Comet	An icy rock that lets off gas and dust.
Constellation	A group of stars in the sky. They're often named after an animal, object, or person and form certain patterns based on where you are.
Galaxy	A collection of thousands to billions of stars held together by gravity. The galaxy we live in is called the Milky Way.
Gravity	A force that pulls matter together.
Light year	The distance light travels in one year.
Moon	A natural object that travels around a bigger natural object. Planets can have moons. Even some asteroids have moons!
Orbit	The curved path that a planet, satellite, or spacecraft moves as it circles around another object.
Planet	A large body in outer space that circles around the sun or another star.
Solar Flare	A burst of energy and particles from the sun.
Solar System	A set that includes a star and all of the matter that orbits it, including planets, moons, asteroids, comets, and other objects.
Spacecraft	A vehicle used for traveling in space.
Speed of Light	Light is the fastest thing in the universe. It travels 186,282 miles (299,792,458 meters) every second.
Star	A ball of shining gas, made mostly of hydrogen and helium, held together by its own gravity.
Supernova	The explosion of a star that makes it as bright as a whole galaxy.
Universe	All of space and time, and everything in it. It's everything ever!
Vacuum	An empty space that doesn't have any matter.
Wave	A way energy moves from one place to another.

Taking Space Into the Classroom

Realted Activities from the Cahoots NI Study Guide

Photo courtesy of Secrets of Space

If you were going to space, what would you bring?

Did you know some astronauts have brought items into space, sometimes secretly? What would you bring with you? Something personal value, useful, or something you just couldn't live without in space?

Take into consideration the size of the item, and how usable it would be in zero gravity! Present your decision to your class and explain your reasons.

Diary entry from the moon

Write a diary entry from the perspective of Neil Armstrong or Buzz Aldrin following the moment they set foot on the moon in 1969. Include what they may have seen and how they may have felt.

Is there anyone out there?

Do you think there's life on other planets? What might they look like? Draw or make your own alien creation and describe their unique features. How do their bodies help them survive on their planet? What do they eat? What language do they speak?

Star Gazing

Try keeping a moon diary for a month and watch the moon change shape. Take a look at the moon every night for a full lunar cycle, 28 days. Draw the shape you see and track the changes that happen. Analyze your results - why does this happen?

Women in Space

Suni and Mae loved learning all about women who work in the space industry. Create your own research project on women who do this kind of work.

Photo courtesy of Secrets of Space

Resources

Cahoots NI website

This page contains a link to a highlight trailer

Link to Wonder & Awe, a guide from the Smithsonian, that uses art, culture, history, and science-based stories and activities to help us connect to "our place in space"

An article about what happened when four artists spent six days on a simulated moon mission

Link to a series of clips on music and outer space

NASA website

NASA image and video library

Live streams from space

Sounds from space

Kennedy Space Center educator resources

Hubble Telescope resources

The Overview Effect :

Chris Hadfield, a Canadian astronaut, sings from space

Photo courtesy of Secrets of Space

Learning Activity - Slowing Down in Space

Background Information

One of the challenges NASA faces is how to deliver heavy payloads (i.e., experiments, equipment, and people) to destinations with an atmosphere, as current aerospace technology includes rigid aeroshells which are constrained by a rocket's payload size. One potential answer is an inflatable aeroshell for the spacecraft that can be compactly stored for launch and then extended to a larger scale when the spacecraft reaches its destination. This technology enables the possibility of a variety of proposed NASA missions to destinations such as Mars, Venus, and Titan, and could also be helpful in returning spacecraft to Earth.

When a spacecraft enters an atmosphere, aerodynamic forces act upon it. Specifically, aerodynamic drag helps to slow it down, converting its kinetic energy into heat. Utilizing atmospheric drag is the most mass-efficient method to slow down a spacecraft. The atmosphere of Mars is much less dense than that of Earth and provides an extreme challenge for slowing down a spacecraft entering the planet's atmosphere. Mars' atmosphere is thick enough to provide some drag but too thin to decelerate the spacecraft as quickly as it would in Earth's atmosphere. A large deployable aeroshell — an inflatable structure protected by a flexible heat shield — could act as a giant brake for the spacecraft as it traverses the Martian atmosphere. The large aeroshell creates more drag and begins slowing down in the upper reaches of the atmosphere, allowing the spacecraft to decelerate sooner, at higher altitude, while experiencing less intense heating.

Grade Range:
3-8

Time Needed:
90 Minutes

Materials List:

- Scissors
- Rulers
- Clear tape
- Digital scale or balance
- Thin string (e.g., embroidery thread, fishing line)
- Small sealable bag, one per group
- Washers, marbles, or pennies to serve as mass

Learning Activity - Slowing Down in Space (continued)

In this activity, participants will design a drag device system to slow the descent of a weighted spacecraft and understand how a drag system helps to safely reduce the velocity of a spacecraft during entry or re-entry.

Career Connection

Slowing down in space requires the development of new technologies to aid in our exploration of other worlds. This requires a team of people with diverse expertise and specialized skills working together to create the science and technology payloads that we will need. Below are just a couple of examples of the careers involved developing these technologies:

- **Engineering** careers use science principles to design products and improve systems and manufacturing processes. There are a variety of different types of engineering careers, such as electrical and mechanical.
- **Robotics** careers are involved in the development, implementation, and the maintenance of technologies that deploy robotics. They also ensure that they operate efficiently and safely.

Materials List (continued):

- Hole punch and hole reinforcements or stickers
- Cardstock or old file folders
- Spacecraft template or cup glued to a paper plate
- Tall ladder or overhang above a stairway or common area
- Materials to make drag device (e.g., trash bags, grocery bags, wrapping paper, tissue paper, plastic tablecloths)

Activity Procedures

⚠ Safety

- Ensure that students are practicing safe cutting techniques when building their drag device systems.
- Ensure that students do not stand on any unstable surfaces, such as tables or chairs, when performing their drop tests.
- Ensure that students' drag device systems do not contain sharp or pointed surfaces that could present a hazard during the drop tests.
- Ensure that the drop zone is clear of students and items that may be in the path of falling prototypes.

Preparation

1. Gather and prepare all listed supplies.
2. Group participants in teams of three to four.
3. Set up testing stations with safety equipment.

Introduce the Challenge

- Ask students: Have you ever noticed when a bird is preparing to land, it typically has its wings spread out? Why do you think that is the case?
- Have students drop two pieces of paper, one crumpled and one flat (the only variable should be the shape and surface area of the paper). What do they notice as the pieces fall?

Learning Activity - Slowing Down in Space (continued)

Facilitate the Challenge

1. Teams will use the provided template to build a spacecraft and will place a plastic bag with 20 to 30 grams of mass, representing added “cargo”, inside the spacecraft (a paper plate with a cup glued to the surface could also be used as an alternative to the template).
2. Allow teams to see the available materials for creating their drag device system. The total design (i.e., spacecraft, cargo, and drag device) cannot exceed 50 grams.
3. Each team will brainstorm and sketch their design.
4. One participant from each team should gather the needed materials.
5. Teams will build and test their drag device system by dropping the spacecraft from at least 2 meters high. Compare drop times with and without the drag device system.

Challenge Questions

- Which drag device system characteristics provided the most reliable results?
- Which design had the slowest descent (longest drop time)?
- What information could engineers working on this project learn from your team’s results?

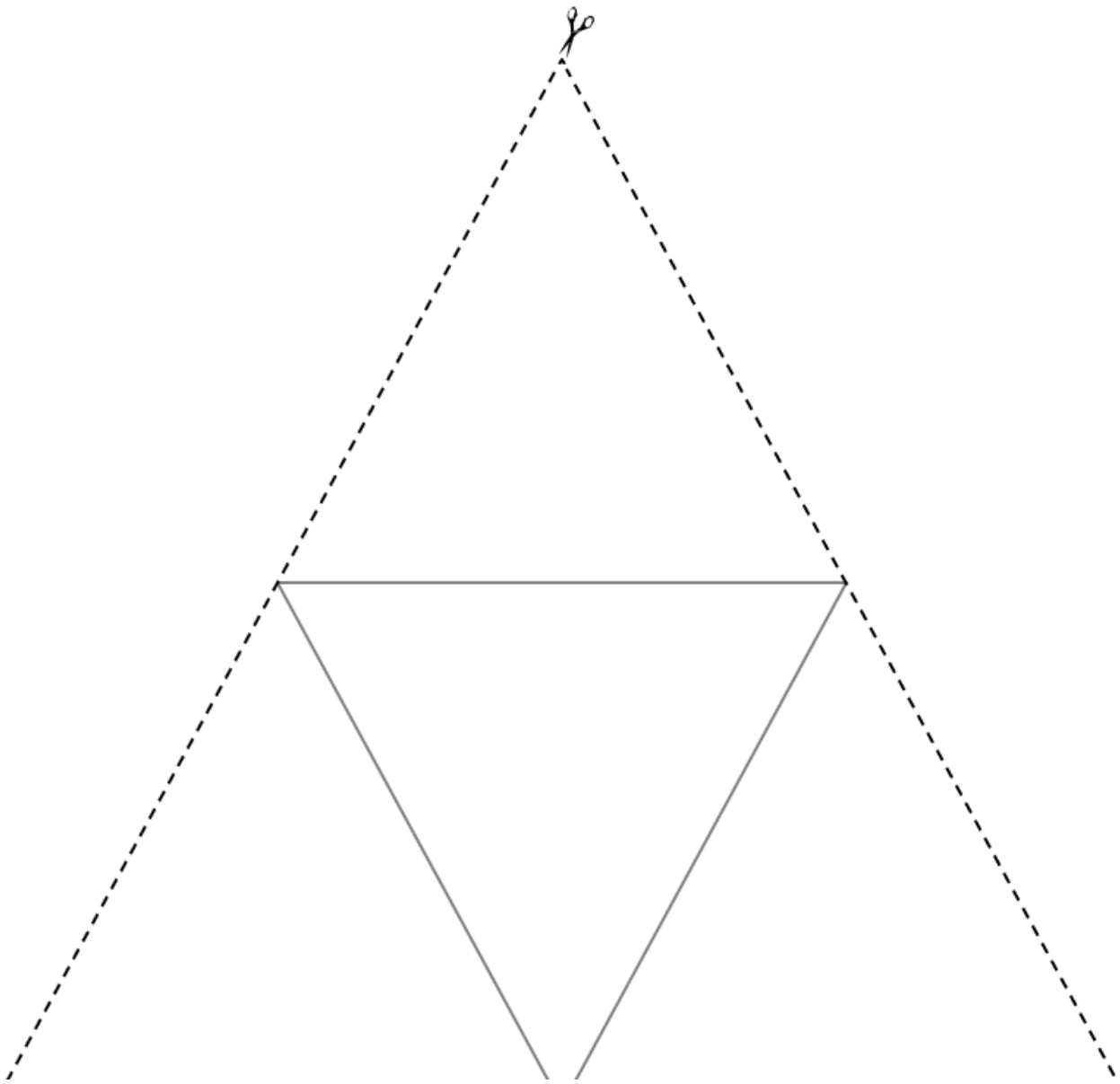
Extensions

- Have participants redesign their drag devices to improve their performance.
- Repeat the challenge but give a constraint for the drag device. For example, the drag device must have at least five separate angled edges.
- Calculate surface area for each drag device. Surface area can be estimated by tracing the shape of the drag device onto centimeter grid paper and counting squares. Compare drop time results for various surface areas. Plot surface area versus drop time on a graph.

Learning Activity - Slowing Down in Space (continued)

Template

Cut out the larger triangle and fold on inner lines to create a pyramid shape. Put weights inside the pyramid shape and tape up sides.



BE YOUR OWN CRITIC

Now it is your turn to tell us what you thought about the performance that you saw at Overture Center! Use this worksheet to brainstorm some ideas. Make sure to use specific examples from the performance. If you forgot anything, ask your friends and teachers who went to the show with you. Turn your ideas into a rough draft and then send a final copy to us!

I saw _____
(SHOW TITLE)

Overture Center is...

because...

What would you say this show is about?

Two things that I really loved about the performance were...

Two things that could have been better in the performance were...

I thought the artistic elements (scenery, sound/music, lighting, costumes) were...

because...

I would want to meet the character...

in real life because...

If I could ask the performer(s) a question, I would ask them...

Imagine that you're telling a friend about this show. What would you say?

Academic Standards

SCIENCE

Physical Science 2 (PS2) — Forces, Interactions, Motion, and Stability

SCI.PS2.B.5:The gravitational force of Earth acting on an object near Earth's surface pulls that object toward the planet's center

Earth and Space Science 1 (ESS1) — Earth's Place in the Universe

SCI.ESS1.A.5: Stars range greatly in size and distance from Earth, and this can explain their relative brightness.

SCI.ESS1.B.5: The Earth's orbit and rotation, and the orbit of the moon around the Earth cause observable patterns.

THEATRE EDUCATION

Content Area: Theatre Performance (TP)

Standard TP 3: RESPOND—Students will critically interpret intent and meaning in order to evaluate artistic work.

TP.R.7.m: Analysis – Express preferences for effectiveness of theatrical performance choices (what works and what does not work).

TP.R.8.m: Reflection – Assess personal participation in a production through critique using theatre vocabulary.

TP.R.9.m: View Performance – Demonstrate developmentally appropriate audience etiquette.

Standard TP 4: CONNECT—Students will relate prior knowledge and personal experience with theatre to cultural and historical contexts.

TP.Cn.9.m: Cultural Social Context – Examine how theatre relates to self, others, and the world in the past and present.

TP.Cn.10m: Research – Describe the "given circumstances, "environmental and situational conditions that influence a theatrical work

TP.Cn.12.m: Cross Disciplinary – Analyze historical and cultural relationships between theatre and other disciplines.

MUSIC

Standard 3: Respond

MG3.R.5.i: Recognize and define grade- appropriate foundational musical elements.

MG3.R.7.i: Utilize appropriate music terminology in the evaluation /reflection of music performances.

MG3.R.8.i: Demonstrate proper concert/audience etiquette.

Standard 4: Connect

MG4.Cn.5.i: Compare the historical and cultural aspects of music with other disciplines.

MG4.Cn.6.i: Explain how music relates to self, others, and the world.

About Live Performance

Theater, unlike movies or television, is a LIVE performance. This means that the action unfolds right in front of an audience, and the performance is constantly evolving. The artists respond to the audience's laughter, clapping, gasps and general reactions. Therefore, the audience is a critical part of the theater experience. In fact, without you in the audience, the artists would still be in rehearsal!

Remember, you are sharing this performance space with the artists and other audience members. Your considerate behavior allows everyone to enjoy a positive theater experience.

Prepare: Be sure to use the restroom before the show begins!

Find Your Seat: When the performance is about to begin, the lights will dim. This is a signal for the artists and the audience to put aside conversations. Settle into your seat and get ready to enjoy the show!

Look and Listen: There is so much to hear (dialogue, music, sound effects) and so much to see (costumes, props, set design, lighting) in this performance. Pay close attention to the artists onstage. Unlike videos, you cannot rewind if you miss something.

Energy and Focus: Artists use concentration to focus their energy during a performance. The audience gives energy to the artist, who uses that energy to give life to the performance. Help the artists focus that energy. They can feel that you are with them!

Talking to neighbors (even whispering) can easily distract the artists onstage. They approach their audiences with respect, and expect the same from you in return. Help the artists concentrate with your attention.

Laugh Out Loud: If something is funny, it's good to laugh. If you like something a lot, applaud. Artists are thrilled when the audience is engaged and responsive. They want you to laugh, cheer, clap and really enjoy your time at the theater.

Discover New Worlds: Attending a live performance is a time to sit back and look inward, and question what is being presented to you. Be curious about new worlds, experience new ideas, and discover people and lives previously unknown to you. Your open mind, curiosity, and respect will allow a whole other world to unfold right before your eyes!

Please, don't feed the audience: Food is not allowed in the theater. Soda and snacks are noisy and distracting to both the artists and audience.

Unplug: Please turn off all cell phones and other electronics before the performance. Photographs and recording devices are prohibited.