



EDUCATION @ MESA ARTS CENTER



MESA ARTS CENTER PRESENTS
NATIONAL GEOGRAPHIC LIVE!
JOEL SARTORE: BUILDING THE PHOTO ARK

Ikeda Theater | November 21 | 10:15 AM | Grades: 5 - 8

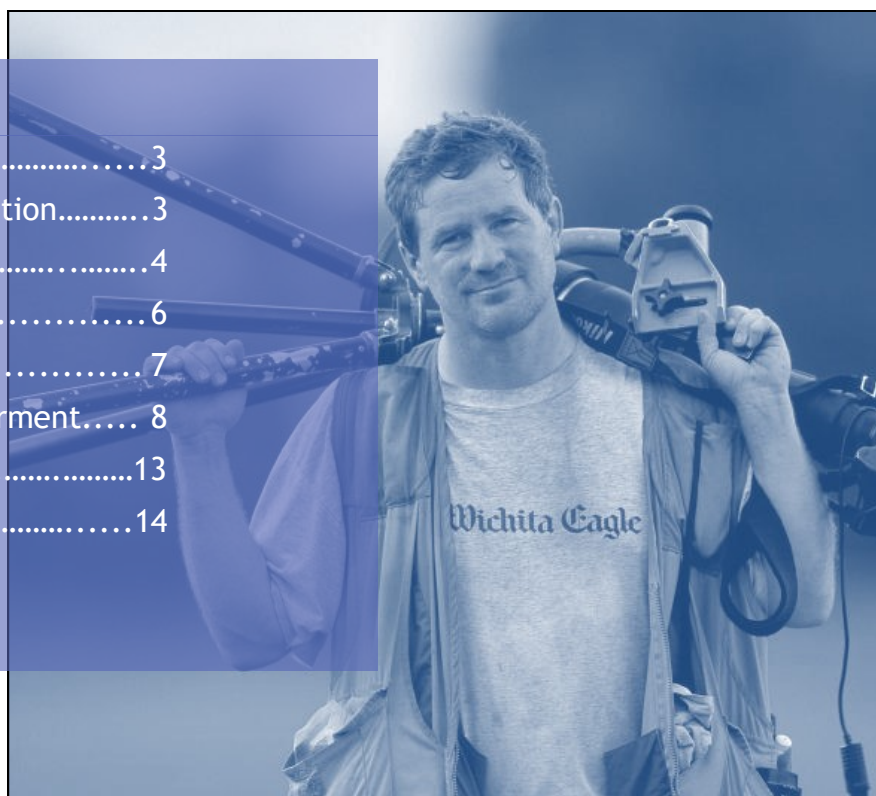
2019/2020 EDUCATOR RESOURCE GUIDE



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ABOUT JOEL SARTORE, PHOTOGRAPHER...

For over a decade Andy Mann has been a forerunner in the world of adventure film and conservation photography. His work is helping to tell the story of our rapidly changing planet, focusing heavily on ocean conservation and water issues on all seven continents for *National Geographic* magazine and National Geographic's Pristine Seas, Sea Legacy, Wildlife Conservation Society, and more. His images are represented by Nat Geo Creative.

Andy is the co-founder of 3 Strings Productions, a commercial and documentary film studio he co-founded with Keith Ladzinski, as well as a founding member of the Sea Legacy Collective with Paul Nicklen and Cristina Mittermeier. He is also an experienced climber, diver, arctic explorer, and workshop leader. Andy's imagery is remarkably memorable, reminding us how the emotion of an image can touch our spirit.



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WELCOME!

Dear Educator,

Thank you for selecting a **National Geographic Live!** field trip with the Mesa Arts Center. We have a dynamic season planned and we look forward to connecting you to our many speakers and presentations. With National Geographic Live, students are able to experience dynamic presentations and make educational connections well beyond the classroom.

We also recognize and appreciate the energy and time spent on your part in coordinating field trips. In this guide we have provided information to help make this the best experience possible.

In addition, the Mesa Arts Center has many open and inviting spaces that make good places to hold a brown bag lunch. No prior arrangements need to be made.

Please contact our offices at engagement@mesaartscenter.com or 480-644-6564 should you have any additional questions.

Enjoy the show!

TEACHER AND CHAPERONE INFORMATION

Chaperones

- ♦ Assign each chaperone a designated group of students and provide him/her with a written list of the students in that group.
- ♦ Ask chaperones to stay with their assigned group throughout the field trip. Adult chaperones are responsible for the students' conduct and behavior throughout their visit to the Center.
- ♦ Please review theater etiquette rules and responsibilities with all chaperones.
- ♦ Have the phone numbers of every chaperone in your group to quickly access each other in case of emergency.

Theater Etiquette

- ♦ No Food or Drink inside the theatre (besides bottled water).
- ♦ Students must be accompanied by chaperones at all times.
- ♦ Cameras and recording devices may not be used during the performance.
- ♦ Please silence cell phones and resist the urge to text message.
- ♦ Listening and following the House Managers and Ushers will help the seating and dismissal process.
- ♦ Feel free to laugh, clap and enjoy the show but also to be respectful of those around you.



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CURRICULUM CONNECTIONS

National Geographic Live: Joel Sartore: Building the Photo Ark

Arizona Academic Standards: Discussion Questions

These standards can be achieved by using the discussion questions included in this guide.

Speaking and Listening

Grades 5-8.SL.1 — Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.

Grades 5-8.SL.2 — Ask and answer questions about key details in a text read aloud or information presented orally or through other media.



Science

SC05-S3C-03 — Evaluate the possible strengths and weaknesses of a proposed solution to a specific problem relevant to human, animal, or habitat needs.

SC06-S4C3-02 — Describe how the environmental conditions such as water quality, climate, population density, and smog affect the quality of life.

SC07-S3C1-01 — Analyze environmental risks caused by human interaction with biological or geological systems.

SC08-S3C1-01 — Analyze the risk factors associated with natural, human induced, and/or biological hazards.

Arizona Academic Standards: STEAM Lesson

These standards can be achieved by using the STEAM lesson included in this study guide.

Speaking and Listening

Grades 5-8.SL.4 — Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.

Grades 5-8.SL.5 — Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.

Writing

Grades 5-8.W.7 — Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.

Grades 5-8.W.8 — Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.



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CURRICULUM CONNECTIONS CONTINUED

National Geographic Live: Joel Sartore: Building the Photo Ark

Arizona Academic Standards: STEAM Lesson

These standards can be achieved by using the STEAM lesson included in this study guide.

Science

Strand 1 of the Science standards lays out the Inquiry process for students in grades 5-8.

Performance objective details vary by grade but the general goals of each Concept are below:

SC-S1C1 — Observe, ask questions, and make predictions.

SC-S1C2 — Participate in planning and conducting investigations, and recording data.

SC-S1C3 — Organize and analyze data; compare to predictions.

SC-S1C4 — Communicate results of investigations.

Additionally these standards support the Engineering Design Process:

Grade 5:

SC-S3C2-03 — Design and construct a technological solution to a common problem or need using common materials.

SC05-S3C1-02 — Propose a solution, resource, or product that addresses a specific human, animal, or habitat need.

SC05-S3C1-03 — Evaluate the possible strengths and weaknesses of a proposed solution to a specific problem relevant to human, animal, or habitat needs.

Grades 6-8:

SC-S3C2-01 — Propose viable methods of responding to an identified need or problem.

SC-S3C2-02 — Compare possible solutions to best address an identified need or problem.

SC-S3C2-03 — Design and construct a solution to an identified need or problem using simple classroom materials.

21st Century Learning Skills

By using the STEAM lesson included in this guide, students can become more proficient in the following Competencies:

- Critical Thinking
- Creativity
- Communication
- Collaboration





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DISCUSSION QUESTIONS

Pre-Performance Discussion Questions

Joel Sartore's presentation is titled *Building the Photo Ark*. What is an ark? What do you think a Photo Ark would include and why would we need one?

Joel Sartore has photographed over 9,500 animals while working on his Photo Ark project. What animal do you think might be most difficult to photograph? Which do you think might be the most interesting? Which animal might be the most dangerous?

Joel Sartore says his goal for the Photo Ark is to get the public to care and save species from extinction. Do you know of any species that are in danger of becoming extinct? What could be leading to species' endangerment? How can photographs help people care about animal species?

Post Performance Discussion Questions

What was something surprising or interesting you learned from Joel Sartore's presentation on nature and humanity?

In what ways did Joel Sartore demonstrate curiosity, responsibility, empowerment, and persistence in his work? Why do you think these attitudes are important for explorers?

Did Joel Sartore make any call to action to support his work? Are there any changes we can make in our day to day lives to support people or animals in crisis? What can we work on together as a group?



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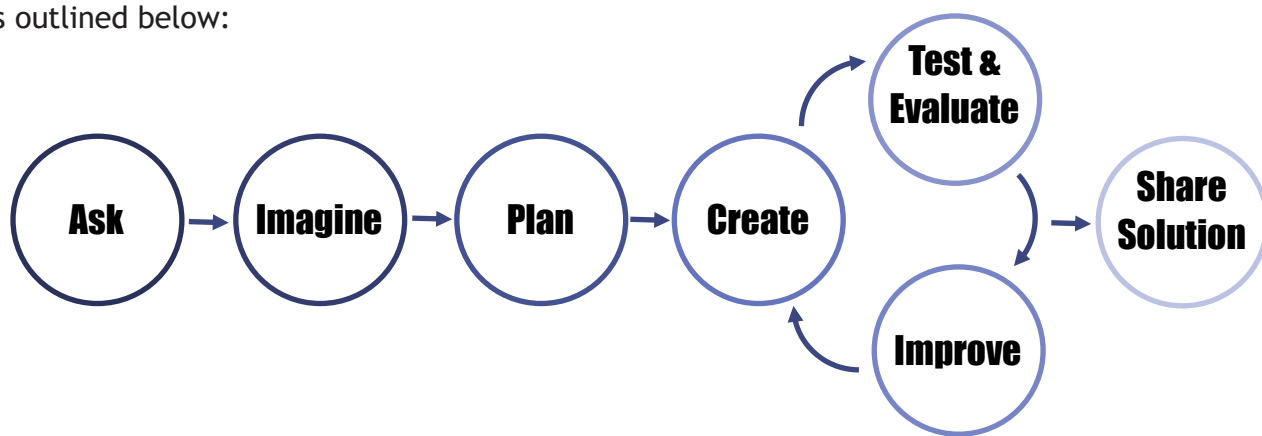
WHAT IS STEM?

STEM is a common buzzword in education these days, so it is important to know what exactly STEM is, and also what it is not. A true STEM lesson not only incorporates different subject areas, but also works to develop students' abilities to think creatively, reason, investigate, and work as a team. Here is a breakdown of what STEM means:

S Science	T Technology	E Engineering	M Math
The study of the natural world.	While traditional digital technology meets this part of STEM, technology is any product made by humans to meet a want or need. Any product created by students to solve a problem can be considered technology.	The design process students use to solve problems.	The study of numbers, equations, functions, and geometric shapes and their relationships.

A science experiment is not necessarily a STEM lesson. The requirements below need to be met as well for a lesson to be STEM based learning:

- The lesson focuses on a real world problem/issue.
- Students are working in productive teams.
- Students are engaging in hands-on inquiry and open-ended exploration. Students should be able to redesign as needed (within time constraints) so there should not be an exact end product/result predetermined by the teacher in mind.
- Students understand that there are multiple right answers to the posed problem and that failure can be used to reevaluate and make changes towards discovering a solution.
- The lesson uses the *engineering design process (EDP)*. EDP is similar to the scientific method and is outlined below:



- Adding any type of art component to the lesson changes STEM to STEAM.



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STEAM LESSON: EYES ON ENDANGERMENT

Joel Sartore has devoted his camera lens and photography skills to making sure animal species are visible and accessible to people in order to encourage support of animal conservation. While students are not able to risk life and limb photographing wild animals, they can help researchers study and classify wild animals in this lesson, as well as create a news flash announcement to create awareness for an endangered species.



ASK (REAL WORLD PROBLEM)	All around the world, animal species and their habitats are threatened by the growth and impact of the human population. Many activists, scientists, and researchers are constantly working to build awareness, protect species and habitats, and create solutions that allow species and humans to coexist. One important factor is the public's awareness that there are species which are in danger of extinction. Without humans to help bring this awareness to the public and advocate for animals, change is unlikely to happen for endangered species which could lead to their extinction. Ask students, "Can you create a public service announcement that can bring awareness and possible solutions to the situation and need for an endangered species?"
MATERIAL POSSIBILITIES	There are three parts to this lesson: a research experience, a visual, and a presentation. Depending on the age and ability of your class the visual and presentation can look quite different. For the research experience student groups will need access to the website https://www.zooniverse.org/projects . Check the section below for more details on how to use the website. The visual should be a drawing or diagram of an invention that could help or protect the endangered species. A variety of art materials such as crayons, markers, scissors, glue, etc. should be available to students for their visual. The presentation can be in front of the class or can be filmed to share with other classes or the school. Students can also create a PowerPoint or Google Slides presentation to enhance their topic.
IMAGINE & PLAN	After students have been grouped and presented with the problem, have them look at the "snapshot" style projects on the Zooniverse website. Most of these projects involve endangered species although some may be a bit more broad in scope. Have students choose an animal project that interests them and complete the Zooniverse project worksheet. This will be the animal they will research and create their presentation about. They will need to do a bit more research about their animal to prepare for the presentation so there is a research worksheet as well to keep them on track. Things to consider when planning the presentation: Why is this animal currently endangered? What is special or important about this animal that makes it worth protecting? What could be invented to help this animal survive? What group of people would benefit from hearing your presentation about this animal? Students should have completed their Zooniverse project and research before moving on to the next stage.



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STEAM LESSON: EYES ON ENDANGERMENT

CREATE	<p>After presenting their research and ideas to the teacher, students will need to decide on jobs and task allocation for the visual and presentation. These can be assigned by the teacher if needed, but ideally students should work together to decide who is responsible for what. Alternatively, they can also work on all the project components and switch off after a set time period. The visual should at minimum be a drawing or diagram of the proposed invention to help the group's endangered species. If possible, students could also make a model of their invention if materials are available. Students can also include other visuals such as pictures of the species and its habitat, data about endangerment rates, or other helpful information. Finally, students will be responsible for a presentation to explain the current situation of their endangered species and their invention idea for protecting the species which will be given to the environmental stakeholders (their classmates).</p>
TEST, EVALUATE, & IMPROVE	<p>Once all groups have completed their visual and presentation, groups will take turns presenting to the class, who will represent the environmental stakeholders identified by that group. The stakeholders can evaluate each presentation on their creativity, practicality, and overall success of creating an awareness of the situation for their chosen species. After all the groups have presented, the stakeholders can share their observations with the presenters.</p>
SHARE SOLUTIONS	<p>After all the presentations have been completed, have students get back together with their group and see if they can think of at least one improvement they could add to or change about their endangered species invention after seeing all of the presentations. Have each group share out their new ideas to finish off the lesson.</p>

LESSON RESOURCES

- Students can share their presentation and ideas to a larger audience here: <https://kidsforsavingearth.org/wp-content/uploads/2018/02/KSE-Reporter-2018.pdf>
- Students can participate in an environmental awareness letter writing campaign. See this lesson for details: https://www.teachengineering.org/activities/view/cub_air_lesson10_activity5





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ZOONIVERSE PROJECT WORKSHEET

1. Go to <https://www.zooniverse.org/> and click on Projects. You can narrow the projects by clicking the Nature icon or type “Snapshot” in the search by name box to pull up all the snapshot style projects. Choose one that is about an endangered animal which interests your group and write it here: _____

2. Once you are on the project page of your choice, click on “Learn More” to read about the project. Write a few sentences about the goal of this project and the animal that is being researched.

3. Spend about 5 minutes doing a classification for the project you chose. What was your impression of it?

4. Why do you think the researchers are asking for citizen assistance for their project? How were you able to help support their research?

5. How might the data the researchers are collecting help this species? Other than general knowledge about this species, what benefit does this study provide?



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ENDANGERED SPECIES INVENTION PLANNING SHEET

BRAINSTORM IDEAS

After your group has enough information, brainstorm together a possible invention that could help your endangered species following these rules:

- Only positive comments
- Encourage wild ideas
- Write down all ideas
- Build on the ideas of others
- Stay focused on the topic

Record your ideas here:

CHOOSE A DESIGN

After discussing all the ideas, choose the design that is the most promising and would be most likely to actually be created by an organization. Write a detailed description of your design and how it helps your endangered species here:

SKETCH DESIGN

On a separate piece of paper, draw a sketch of your idea. You will need to draw a larger version of this design for your visual with labels as needed.



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ENDANGERED SPECIES RESEARCH SHEET

Our endangered species is: _____

1. Why is this species endangered?

2. Where is this species located in the world? What is the preferred habitat of this species?

3. Why should this endangered species be saved? What or who benefits from its survival?

4. What makes this species special or interesting to learn about?

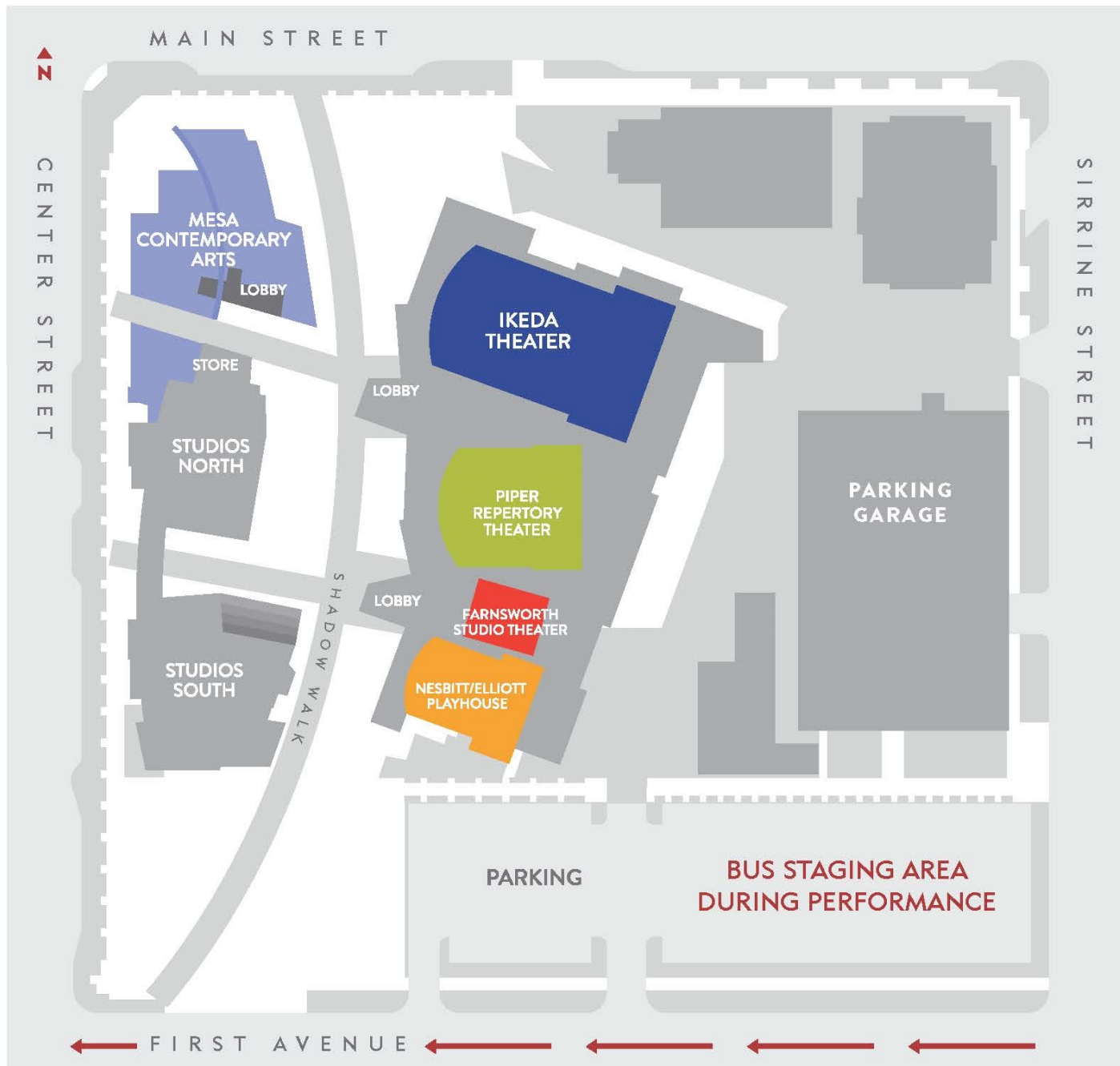
5. How has the population of this species changed in recent years? You may want to make a graph or chart on the back of the paper to show this change.

6. Draw a picture or diagram of your species:

BUS PARKING MAP



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STEPS TO UNLOAD

- 1 Enter the drop off area by coming in westbound on 1st Avenue.
- 2 Pull up to the curb marked with cones and wait until notified to unload passengers.
- 3 Await parking direction from MAC security

STEPS TO PICK UP

- 1 Passengers will exit the theater and meet buses in the bus parking lot area.
- 2 Wait for clearance to depart.



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SHARE YOUR EXPERIENCE!

We'd love to hear your students' response to our shows.
We especially appreciate pictures and letters!

THANK YOU!

Questions? Please contact Engagement at:

P 480-644-6540 | F 480-644-6503

engagement@mesaartscenter.com