EDUCATION @ MESA ARTS CENTER

NATIONAL GEOGRAPHIC LIVE!
SHANNON WILD: PURSUIT OF THE BLACK PANTHER

Ikeda Theater | January 23 | 10:15 AM | Grades: 5 - 8

2019/2020 EDUCATOR RESOURCE GUIDE

EDUCATION @ MESA ARTS CENTER

TABLE OF CONTENTS

ABOUT SHANNON WILD, PHOTOGRAPHER & CINEMATOGRAPHER…

Wildlife photographer and cinematographer Shannon Wild is a passionate conservationist who lives in Africa but works wherever the wildlife calls. In her 15 years documenting wildlife, she's been mauled by a cheetah, charged by an elephant, lions, and buffalo, and bitten countless times by snakes and lizards.

But her most recent assignment might prove her most difficult yet: producing a documentary about a rare black panther – the only one living in 250 square miles of dense forest in southern India. Shannon has spent more than a year and a half in India focused on finding and filming an elusive and rare melanistic leopard—referred to as a black panther. The project has meant countless hours in the forests of southeastern India battling weather extremes, incredibly dense forest and, during filming, a spinal injury. Her passion for protecting and documenting wildlife for the world has driven her to overcome not only her own self-imposed doubts and limits, but others' as well.

Get an inside look at the challenges and dangers of tackling an assignment in an unforgiving environment, from the narrow dirt roads to extreme weather to unexpected injuries – and worse.

EDUCATION @ MESA ARTS CENTER

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.

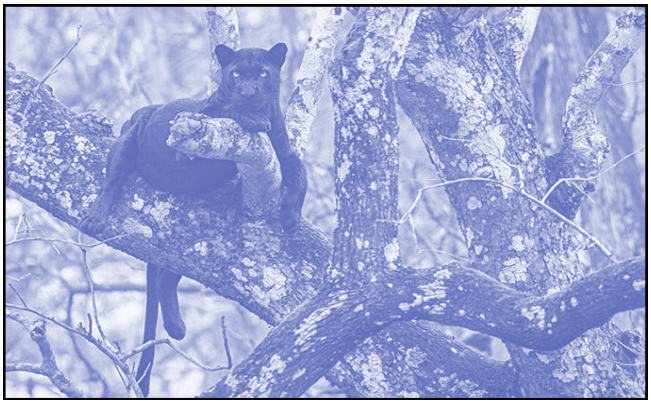
Theater Etiquette

- 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.

EDUCATION @ MESA ARTS CENTER

CURRICULUM CONNECTIONS

National Geographic Live: Shannon Wild: Pursuit of the Black Panther



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.

Math

5.MD.A.1 — Convert among different-sized standard measurement units within a given measurement system, and use these conversions in solving multi-step, real-world problems.

7.RP.A — Analyze proportional relationships and use them to solve mathematical problems and problems in real-world context.

7.G.A.1 — Solve problems involving scale drawings of geometric figures, such as computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.

Mathematical Practice 1 — Make sense of problems and persevere in solving them.

Mathematical Practice 2 — Reason abstractly and quantitatively

Mathematical Practice 6 — Attend to precision.

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.

CURRICULUM CONNECTIONS CONTINUED

National Geographic Live: Shannon Wild: Pursuit of the Black Panther

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 3-8. 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.

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.

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**

DISCUSSION QUESTIONS

Pre-Performance Discussion Questions

Shannon Wild's presentation is titled *Pursuit of the Black Panther.* What do you already know about panthers? What makes a black panther special?

Shannon Wild has said, "The reality is that we as humans need to live in harmony with nature and we're simply not doing it." What do you think of this statement? Are there places where humans are living in harmony with nature? What could we do to become more harmonious with the natural world?

Shannon Wild feels very passionate about wildlife conservation. So passionate that although her experiences as a conservationist photographer have included numerous injuries, battling brutal weather, and dangerous encounters with animals, she continues to document wildlife. What do you feel passionate about in your life? What would you be willing to risk life and limb for?

Post Performance Discussion Questions

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

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

Did Shannon Wild make any call to action to support her 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?

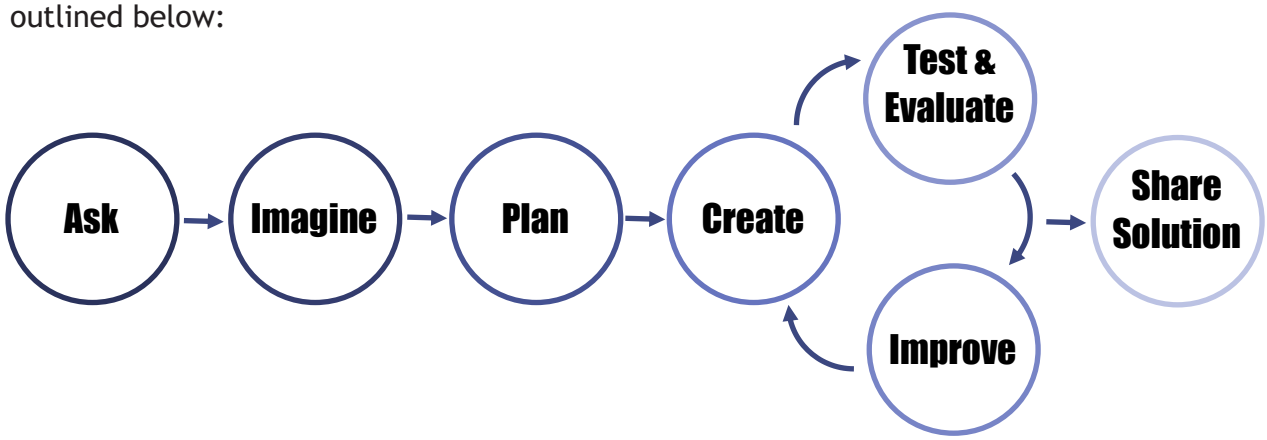
WHAT IS STEM?

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.

STEAM LESSON: ANIMAL TRACKERS

Shannon Wild has tracked all types of animals in Africa, Asia, and the Arctic while filming and photographing wildlife. Tracking the black panther in India proved to be a very difficult task. Animal tracking data can be used by a variety of groups including scientists, conservationists, urban planners, and commercial businesses. In this lesson, students will participate in an activity to help them understand basic animal tracking and then design a device to improve animal tracking capabilities.

ASK (REAL WORLD PROBLEM)	A great deal of information can be gathered about an animal species just from tracking its movements. Researchers can not only learn about a species' range, foraging, and breeding patterns, but also how migratory and foraging paths may change with influences on their environment. Have students participate in the Foraging on a Map activity on page 10 to give them an idea of how different animal movements can look. After participating in the activity, discuss with students what patterns they notice on the map. The students had to actively watch each other to complete the activity but that isn't always feasible for researchers. Ask students, "Can you design a tracking device or system geared specifically towards monitoring a particular species?"
MATERIAL POSSIBILITIES	Depending on expectations of students' final product, materials could be as little as large sheets of paper to draw a diagram on or could include any variety of materials to build an actual model of a tracking device or monitoring system. If students are building models, materials could include: boxes of various sizes, cardboard toilet paper or paper towel tubes, straws, pipe cleaners, paper, tape, wire, markers, crayons, etc.
IMAGINE & PLAN	After students have been grouped and presented with the problem, either ask them to choose an animal they would like to track or assign one for them. They will need to do a bit of research on their animal to determine what features would be important to their tracking device. Things to consider when designing an animal tracking device: What is the habitat like where this animal lives? What time of day is this animal active? Will the device be attached to the animal or monitor it remotely? How will the device be activated? How will the information be obtained from the device? What particular activities are you hoping to capture with the device? Students should sketch out their tracking device or system to scale before moving on to the create stage.

CREATE	After presenting their design sketch and explaining the design choices to their teacher, students will either work together to create a model of their tracking device or create a larger, more detailed diagram. Students will also need to prepare a short presentation for the class to explain about the animal they have chosen, the information they hope to collect from using their tracking device, and a description of their tracking device and how it works.
TEST, EVALUATE, & IMPROVE	Once all groups have completed their final design, groups will take turns presenting to the class. The class can evaluate each tracking device on its creativity, practicality, and overall likelihood of collecting the desired information about the animal. After all the groups have presented, the class can discuss what features they noticed were common in the presentations as well as which features were unusual or thought provoking.
SHARE SOLUTIONS	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 tracking device after seeing all of the presentations. Have each group share out their new ideas to finish off the lesson.

LESSON EXTENSIONS

- *Try out being a citizen researcher by participating in a project at:* https://www.zooniverse.org/projects
- *For a marine animal variation click here:* https://www.teachengineering.org/lessons/view/duk_marine_musc_less2

FORAGING ON A MAP ACTIVITY

Introduction and Objective:

In this interactive activity, students track one another over a pre-defined region as an example of monitoring animal foraging behavior on a spatial scale. Various candy types serve as a food source from which foraging behavior can be monitored. Students use pre-designed trail maps (maps that include the pre-determined candy trails). The initial trail should be composed of one type of candy with external branches composed of different candy types. Once encountering a branching point, a student must choose which direction to travel without straying from the chosen path. While a student is following the path, a fellow classmate records the foraging path on the provided map. After all the data is collected, students record their final foraging maps on the instructor's master map with a unique color. The master map enables students to compare various spatial movements over the habitat.

Materials:

- Various types of candy (be aware of any student allergies when choosing)
- Prior to the lesson prepare a master map to determine how to lay out the candy. Place the candy according to the map design.
- Smaller student copies of the master map

Procedure:

1. Divide the class into groups of two students each.
2. Each group member takes a turn being the recorder or forager. While one student is following the path, the other tracks and record the other student's progress on the map. Inform students that they should NOT collect the candy while on their journeys, but wait to receive the "rewards" of their foraging efforts until the activity end.
3. After each group completes the spatial mapping activity, each student records the data on the teacher's master map using different colored pens, markers or crayons.
4. As a class, query students about the different types of information and patterns that arose from the data. Look at the master map. Ask for observations. Review the many applications of animal tracking information, such as in relation to commercial, conservation and scientific research decisions.

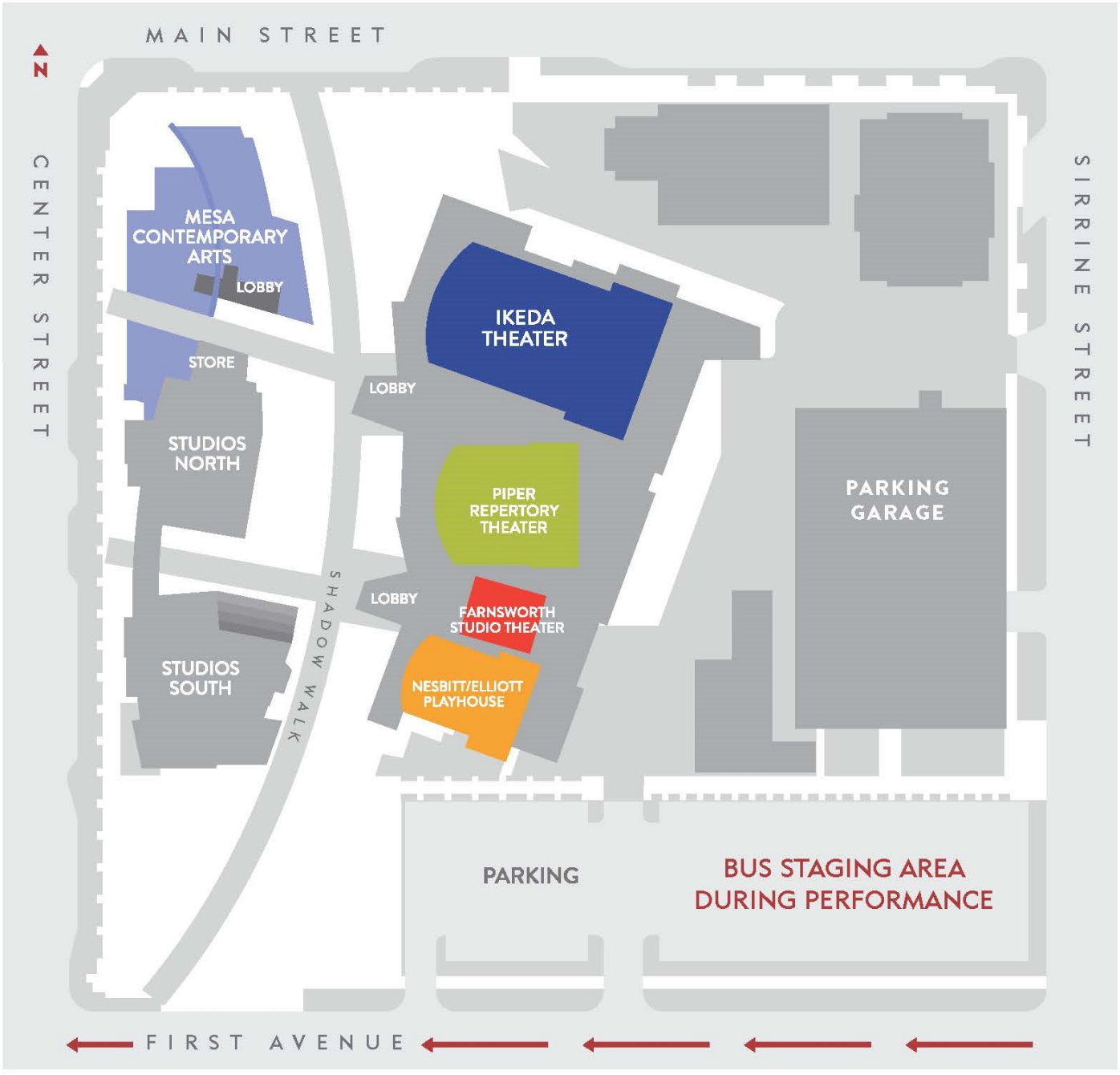
Discussion:

Lead a concluding discussion to see if students were able to draw final conclusions regarding foraging behavior and the collection of spatial data. Ask the students:

- What factors determined the path of individual students? (candy preference) Do you think animals vary their migratory paths depending on preferences such as food availability?
- What are some of the problems and challenges associated with animal tracking technology? Why do we still not know migratory or traveling paths for many species?
- What might be some of the challenges engineers face as they design tracking devices and tracking systems to gather and map data of animal movements? What are your ideas?

BUS PARKING MAP

MESA ARTS CENTER



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.

EDUCATION @ MESA ARTS CENTER

THANK YOU!

Questions? Please contact Engagement at:

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

engagement@mesaartscenter.com