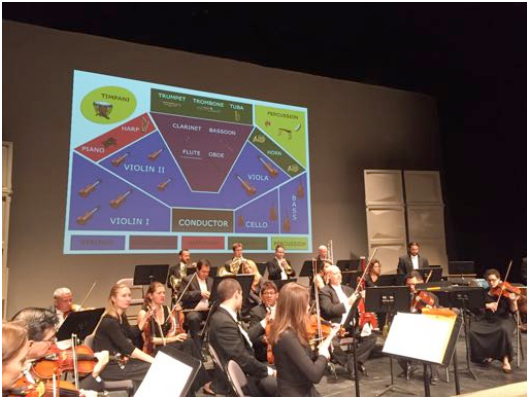


Preserving Our Coral Reefs: Teams of Success

Donna Wissinger and Joy Myers, ARTZ OUT LOUD



An Educator's Guide Grades 6-8

Welcome to the show!

Music, visual art, participation, and beautiful media introduce students to the exciting STEAM careers that can save our planet and the teamwork that creates success in the reef and beyond. Most students know that the blue earth is 71% water and that 95% is in our oceans. They may not realize that the ocean is an interdependent model, like the symphony orchestra of individuals, each with their role, working together for balance and beauty. One model of interdependence in the ocean is the coral reef, the rainforests of the ocean. Coral reefs support over 25% of all marine life on earth. Without the coral reefs, every form of marine life on earth is threatened with loss of habitat, food, and even extinction. In this STEAM and arts-integrated program, students, costumed as scientists, technologists, engineers, media artists and mathematicians, are coached by the artists to state their roles in rebuilding the reef. More students are costumed as the indicator species that reveal that the reef is rebuilt and healthy! Curriculum knowledge and the emotional connection of the arts help students to see their role in preserving their world. **45-55 minutes**

Before the show

Dear Teachers,

Students will gain confidence and have greater retention with some preparation if they are not currently immersed in ocean studies. It will also assist you in creating richer follow-up after the program. Please review the life science curriculum and the interdependence of organisms and the specific aspects related to coral reefs.

Review of Knowledge: some general science information for review and discussion

- Plants and animals, including humans, interact with and depend upon each other and their environment to satisfy their basic needs.
- Both human activities and natural events can have major impacts on the environment.
- Earth is home to a great diversity of living things, but changes in the environment can affect their survival.
- Individuals of the same kind often differ in their characteristics and sometimes the differences give individuals an advantage in surviving and reproducing.
- Recognize that animals cannot make their own food and they must eat plants or other animals to survive.
- Recognize that plants use energy from the Sun to make their food and animals eat plants or other animals for their food
- Recognize things that people do to help or hurt the environment, such as recycling and pollution.

The artist uses the following definitions:

- **Threatened:** Number of individuals in the species is becoming dangerously low
- **Endangered:** The number of individuals is on the brink of extinction; there are few to mate and loss of any one is critical to survival
- **Extinct:** There are no more living individuals of a species
- **Animal:** Species that can move from place to place, must find food to eat, has multiple cells that are encased in membrane
- **Plant:** Species that cannot move from place to place, can make its own food, has cell walls, and can turn sunlight into food

- **Zooxanthellae:** a type of algae that lives inside coral cells; the coral and zooxanthallae help each other to live; the zooxanthallae give coral its color
- **Polyps:** the living portion of corals, extract calcium from seawater and combine it with carbon dioxide to construct the limestone skeletons that form the reef backbone
- **Ichthyologist:** a person who studies fish
- **Mutualism:** symbiotic relationship in which both species benefit

Important Plant and Animals of the Coral Reef

- **Stony Coral:** the reef architects including staghorn, elkhorn and brain coral
- **Octocorals:** the soft corals including sea fans and sea whips; they have many colors including green, orange, lilac, purple, yellow, or brown
- **Algae:** help coral to live and provide food for many animals
- **Parrotfish:** the reef cleaners; they eat algae and dead coral keeping the reef in balance
- **Butterfly fish:** indicators of a healthy coral reef; they eat coral and help keep the reef in balance as they too are food for larger fish
- **Crabs:** they eat worms, snails, and algae helping to keep the reef in balance
- **Jellyfish:** provide safety for some smaller fish and are food for larger fish
- **Sharks:** the apex predator; they eat sick or injured fish keeping the reef healthy

Topics for Reflection

- Why study life in the ocean? (Human life depends upon the health of the ocean for oxygen, food, and recreation)
- How do great teams work together in music, drama, sports, the environment? (Each has their role and each depend upon others for success).
- How do we reconcile various positions related to a topic like climate change? (This is a discussion for mature students who can understand various points of view and defend their own)

Florida Standards that connect to the performance experience:

- **SC.6.L.14.In.3:** Identify that cells carry out important functions within an organism, such as using energy from food.
- **SC.6.L.14.In.4:** Recognize that plant and animal cells have different parts and each part has a function.
- **SC.7.L.17.In.1** Identify that in a simple food chain, energy transfers from the Sun to plants (producers), to animals (consumers), and to organisms that cause decay (decomposers).
- **SC.7.L.17.In.2:** Describe how organisms interact with other organisms in an ecosystem to help each other (mutualism), to obtain food (predation), and to benefit at the expense of the other (parasitism).
- **SC.7.L.17.Su.1:** Identify different types of consumers in a food chain, including animals that eat plants, animals that eat other animals, and animals that eat plants and animals.
- **SC.7.L.17.Su.2:** Recognize how living things affect each other in their habitat (ecosystem).
- **SC.7.L.17.Su.3:** Identify how a lack of food, water, or shelter affects plants and animals in their habitats.
- **SC.8.N.2.In.1:** Identify that scientific knowledge must be supported by evidence.
- **SC.8.N.2.Su.1:** Recognize examples of evidence that supports scientific knowledge.
- **SC.8.N.2.Pa.1:** Recognize an example of observable evidence related to science.

Theater Etiquette

Dear Teachers,

Your excitement is an essential part of excellent preparation for students. Your students can also understand their role in creating a fun, rewarding, and exciting experience. Please review or explain the following:

- There are many chances to answer questions and participate. If hands are raised then everyone will have a chance to share what they know; this feels good and teaches awareness and self-control.
- Sometimes everyone will be invited to answer together, sometimes the artist will ask for raising hands. Be courteous and alert!



Participation: The artists ask questions that encourages thinking. Teachers can **practice skills in the classroom of speaking clearly and in a voice that can be heard by others.**

Performance Etiquette Reflection Activity

For reflection: In what ways does the audience have a role in the performance?

- How is a performance different than watching TV?
Remember that the performers are in the room with you and can hear you and feel your interest and actions.
- How does being involved increase your own enjoyment?

Information relating to performance genre and content

For teachers: The artists use many dynamics, props, and tones in their voices to create interest and meaning. Every student will be honored for his or her answers and participation.



After the Show

Language Arts and Science 6-8:

- **1.** Ask students to form a circle or groups describing their thoughts about the program or a specific STEAM career or species found in the reef using vocabulary from the program. Students can also describe how their actions could make a positive difference for ocean life. Upon cue from the teacher, another student continues their reflections upon the same topic or a change as directed by the teacher. The teacher can determine when to select another character or topic to continue as needed to engage all students. Teachers can ask students to provide examples that support their thoughts. This can also be done as a writing exercise.
 - **LAFS.6.SL.1.AP.1a** Make appropriate comments that contribute to a collaborative discussion.
 - **LAFS.6.SL.1.AP.1b:** Review the key ideas expressed within a collaborative discussion.
 - **LAFS.7.SL.2.AP.4a:** Present claims and findings, emphasizing salient points in a coherent manner with pertinent descriptions, facts, details and examples.
 - **LAFS.8.SL.2.AP.4b:** Report on a topic, with a logical sequence of ideas, appropriate facts and relevant, descriptive details that support the main ideas.
2. Use a similar exercise through small group discussion and sharing of ideas through presentation regarding the role of STEAM careers.
3. Ask students to write a narrative about their favorite STEAM career or species and their actions.

Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

4. Ask students to research various accounts or perspectives of climate change or other human activities and their effects on the coral reefs and ocean health.

Analyze multiple accounts of the same event or topic, noting important similarities and differences in the point of view they represent.

5. Ask students to complete the Inventory of Learning as teams or individually to further solidify knowledge. Ask students to elaborate upon questions 3 and 6.

6. Ask students to share their impressions of the program and what parts they enjoyed and why.

- **LAFS.6.SL.1.AP.2a** Explain information learned from various mediums.
- **LAFS.7.SL.2.AP.4b:** Report on a topic, with a logical sequence of ideas, appropriate facts and relevant, descriptive details that support the main ideas.
- **LAFS.8.SL.2.AP.4a:** Present claims and findings, emphasizing salient points in a coherent manner with relevant evidence.



**Teams of Success: Scientists, Administrators,
Artists, Teachers and Students**

Inventory of Learning: Choose the best answer

1. **Coral are:** a. plants b. animals c. rocks

2. **Coral need:**
 - a. clear, warm temperatures between 73-84 degrees f
 - b. PH 8, Salinity 24-40 ppt
 - c. a & b

3. **Indicators species:**
 - a. tell us the coral are doing well when there are plenty
 - b. let us know the reef is dead when there are plenty

4. **Extinct means there are no more of a species.**
True False

5. **Choose the incorrect meaning**
 - a. Extinct: a few individuals left in a species
 - b. Endangered: few numbers of a species; without intervention may become extinct

6. **We are each responsible for:**
 - a. the writing of our life stories
 - b. depending upon others to live our lives for us
 - c. we have no responsibility for our life stories

7. **Mutualism means**
 - a. species act independently
 - b. symbiotic relationship; neither species benefit
 - c. symbiotic relationship; both species benefit

8. **Climate change is a hoax.** True False

9. **An example of an apex predator is**

- a. Zooxanthellae b. Sharks c. Parrotfish

10. **Brain coral grow quickly; unaffected by climate change.**

True False

11. **TEDs are**

- a. turtle excluder devises
- b. useless regulations for shrimpers
- c. people who study fish

12. **The following is incorrect regarding coral bleaching**

- a. bleaching indicates coral under stress
- b. bleaching can be reversed if conditions enable the zooxanthellae to return within 3-4 months
- c. bleaching is harmless to coral and unrelated to human activity

13. **STEAM careers can help preserve the planet by**

- a. gathering and analyzing data related to coral health
- b. creating machines for the lab that simulate future climate change
- c. developing technologies that measure and predict climate change
- d. all of the above

About the Artist

Flutist Donna Wissinger has been called a '*flutist of rare gifts*' by the New York Times. Her concerts include acclaimed solo recitals on the mainstages of **Carnegie Hall** and on the equally renowned **Glinka Capella** in St. Petersburg, Russia. Featured tours have included Europe, Asia, The Middle East, Australia, and New Zealand.

Donna's great passion is combining fun and real learning for unforgettable educational programs. Her programs, including *The Pied Piper and other Fantastic Tales*, *Peter and the Wolf*, *The World Turned Upside Down: Music of the American Revolution*, *Tales of Legendary Florida*, and *Preserving Our Coral Reefs: Teams of Success* and the accompanying programs with orchestra receive rave reviews.

Donna is the inaugural recipient of the prestigious **Doris Leeper Award for Excellence in Arts Education** and is a premier artist with Creative Leaps International; the Florida Touring Program; and The New York based Learning Arts. Donna enjoys being fit. She is a USPTA tennis professional, a long distance runner, and an internationally ranked USTA long distance triathlete. Her bicycle/flute performance tour of cycling 2000 miles and playing 82 concerts from NYC to Miami was featured on the National Geographic Channel. To learn more visit www.donnawissinger.com.

