Scavenger Hunt

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The Arts in STEM Advancing Meaningful Integration

Rider University

Scavenger Hunt

Incorporating Art into my STEM lessons is fun and engaging for my students. Before starting this Integrating Arts class, I had already envisioned this lesson. I am very excited to include it as my final integrated lesson. I am already in the process of teaching this unit on Marine biologist. Currently my district uses Rozzy Career Adventures for our STEM program. Since I am a traveling STEM teacher I am often modifying lessons to fit the needs of my students and modifying to the teaching environments that are presented to me.

Art Integration Idea

After learning about the different aspects of how marine biologist study the environment, students will create parts of the coral reefs from construction paper and recycled toilet paper tubes which will be used to create a mural depicting the coral reef. The mural will be assembled by the teacher and will be used in the next activity session. The students will explore the coral reef like a marine biologist. The mural will be setup on the stage behind a curtain, the students will investigate the mural in the dark with flashlights and then compare how they see it in the light. During this activity students will collect data and count sea life

(types of fish, sea turtles). This artistic approach to studying the coral reef habitat will engage many types of learners. The following art standards connect to this integration.

National Core Art Standards
Visual Arts
Creating
Enduring Understanding: People create and interact with objects, places, and design that define, shape, enhance, and empower their lives.
Essential Question(s): How do objects, places, and design shape lives and communities? How do artists and designers determine goals for designing or redesigning objects, places, or systems? How do artists and designers create works of art or design that effectively communicate?
VA:Cr2.3.2a Repurpose objects to make something new.
Connecting
Standard 10: Synthesize and relate knowledge and personal experiences to make art. Enduring Understanding: Through art-making, people make meaning by investigating and developing awareness of perceptions, knowledge, and experiences. Essential Question(s): How does engaging in creating art enrich people's lives? How does making art attune people to their surroundings? How do people contribute to awareness and understanding of their lives and the lives of their communities through art-making?

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VA:Cn10.1.2a Create works of art about events in home, school, or community life.
Theatrical
Creating
Enduring Understanding: Theatre artists rely on intuition, curiosity, and critical inquiry. Essential Question(s): What happens when theatre artists use their imaginations and/or learned theatre skills while engaging in creative exploration and inquiry?
Enduring Understanding: Theatre artists rely on intuition, curiosity, and critical inquiry. Essential Question(s): What happens when theatre artists use their imaginations and/or learned theatre skills while engaging in creative exploration and inquiry?
TH:Cr1.1.2.b. Collaborate with peers to conceptualize scenery in a guided drama experience (e.g., process drama, story drama, creative drama).
Anchor Standard 6: Convey meaning through the presentation of artistic work. Performing Anchor Standard 5: Develop and refine artistic techniques and work for presentation. Enduring Understanding: Theatre artists share and present stories, ideas, and envisioned worlds to explore the human experience. Essential Question(s): What can I do to fully prepare a performance or technical design? Performing Performing Essential Question(s): What happens when theatre artists and audiences share a creative experience?
TH:Pr6.1.2.a. Contribute to group guided drama experiences (e.g., process drama, story drama, creative drama) and informally share with peers.

NJ ArtsStandards
Content Area:Visual and Performing Arts
Standard 1.3 Performance: All students will synthesize those skills, media, methods, and technologies appropriate to creating, performing, and/or presenting works of art in dance, music, theatre, and visual art.
Strand D. Visual Art
Content statement : Visual statements in art are derived from the basic elements of art regardless of the format and medium used to create the art. There are also a wide variety of art media, each having its own materials, processes, and technical application methods for exploring solutions to creative problems.
Indicator #: 1.3.2.D.1 31 Create two- and three-dimensional works of art using the basic elements of color, line, shape, form, texture, and space, as well as a variety of art mediums and application methods.
Content Standards: Knowledge of visual art media necessitates an understanding of a variety of traditional and nontraditional tools, applications, possibilities, and limitations.
Indicator # : 1.3.2.D.4 Explore the use of a wide array of art mediums and select tools that are appropriate to the production of works of art in a variety of art media. Visual awareness stems from acute observational skills and interest in visual objects, spaces, and the relationship of objects to the world.
Content Standard: Visual awareness stems from acute observational skills and interest in visual objects, spaces, and the relationship of objects to the world.
Indicator #: 1.3.2.D.5 Create works of art that are based on observations of the physical world and that illustrate how art is part of everyday life, using a variety of art mediums and art media.
Content Standard: Plays may use narrative structures to communicate themes.
Indicator # 1.3.2.C.1 Portray characters when given specifics about circumstances, plot, and thematic intent, demonstrating logical story sequence and informed character choices.

Lessons and Pacing

I have attached the lesson plans that guided my unit however, I have added or modified activities throughout the unit. The last lesson “Tracking Sea turtles” was the base lesson that inspired me to add the art integration piece.

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Background - Prior to learning about Marine Biologist students just completed a Unit focused on What does a Chemist do? The final investigation in this unit involved observing chemical reactions and mixing matter. Students mixed materials to make new substances, they observed and compared chemical reactions with baking soda, water and vinegar and investigated what happens when water and oil are mixed. These investigation provided building blocks for future investigations.

Pacing

Day 1 45 mins Who is a Marine Biologist
Engage Show image of marine biologist diving

Explore
Question
What do you observe in this picture?
Allow students to share ideas
Where do you think this person is?
What do you think they are doing?

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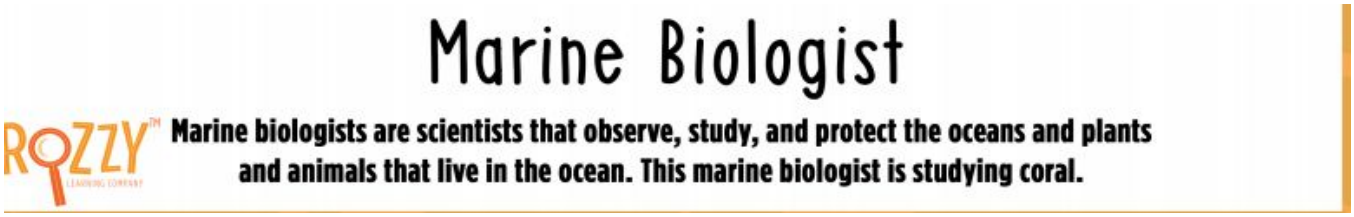
Explain
Marine Biologist are scientist that study



Day 2 45 mins Oil Spill
Engage /Explore
Show bottle with colored water and oil from previous chemistry lessons.
Ask students to recall where the oil is in the bottle and where the water is?
Turn over the bottle and allow students to observe the water and oil mixing and separating.
Question What happens? Why
Check for understanding.
Read Oil Spill by Melvin Berger
Day 3 45 mins Oil Spill Explore Activity Modified Lesson from Rozzy learning

Scavenger Hunt

Oh no! There's an Oil Spill

Introduction to Career:

Child-friendly definition of marine biologist: A scientist who studies and protects sea animals and plants that live in the ocean **(show Discovery Picture: Marine Biologist)**.

Adventure Description (30 minutes)

Explain to explorers that they will be learning why oil spills are so dangerous to animals and plant life that live in the ocean. Explorers will also discover how it is difficult to remove oil from the water. In addition, explorers will learn how marine biologists rehome animals after an oil spill so that they are safe.

Activity 1: Cleaning Up An Oil Spill

- Explain that marine biologists find ways to make sure that the ocean stays clean for animals to swim and live in. Sometimes accidents happen and the water gets dirty. This can happen when oil gets into the ocean (show **Discovery Picture: Oil Spill**).
- Ask explorers why they think it is dangerous or bad for ocean water to be dirty. Explain that when an oil spill happens, marine biologists work together to come up with ways to clean the water.
- Then, have explorers get in small groups and help set up the following oil spill experiment:
  (1) Set out a bin of water for explorers. Have explorers add blue food coloring to water (so it looks like the ocean).
  (2) Have explorers add plastic animals, feathers, and pom pom balls to the water.
  - Explain that the feathers and pom pom balls are the animals who live in the water.
  (3) Then, have explorers add ¾ cup of oil to the bin of water.
  (4) Encourage explorers to come up with ways to get the oil out of the water (e.g., scoop water out with a spoon, use a paper towel, use hands). Have explorers brainstorm as a team and allow them to experiment with finding ways to clean the water.
- Explain that there is no way to get all of the oil out of the water. This is why oil spills are so dangerous for sea animals! Marine biologists work very hard to come up with new ways to clean oceans.
- Next, make a chart of the different methods explorers used to get the oil out of the water. As a group, vote on which methods worked best.

Contact Allison, Director of Customer Service, with any questions or feedback at 314-272-2560 or allison@rozzylearningcompany.com

Send photos of your explorers and their projects to allison@rozzylearningcompany.com to be featured on Rozzy's website, social media pages, and blog!

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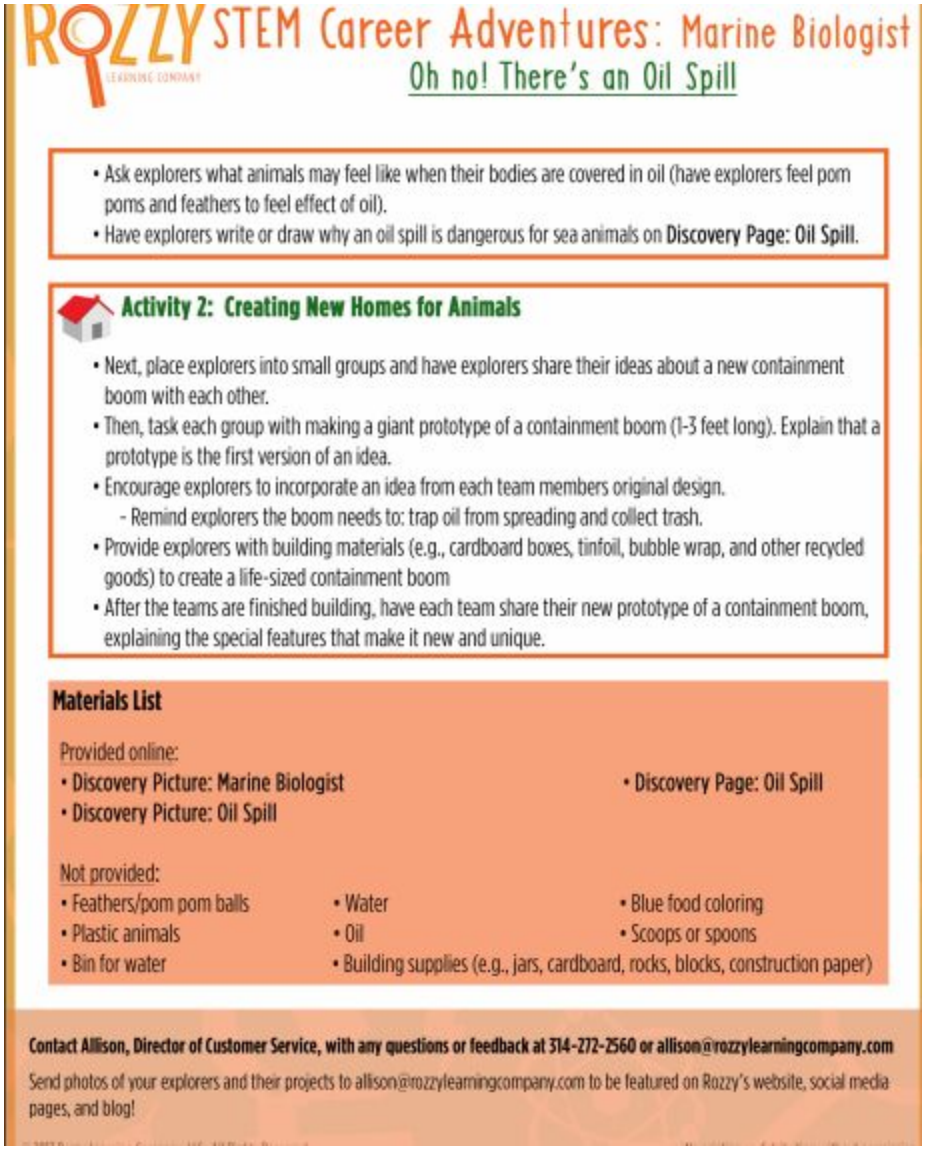

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STEM Career Adventures: Marine Biologist

Oh no! There's an Oil Spill

- Ask explorers what animals may feel like when their bodies are covered in oil (have explorers feel pom poms and feathers to feel effect of oil).
- Have explorers write or draw why an oil spill is dangerous for sea animals on **Discovery Page: Oil Spill**.

Activity 2: Creating New Homes for Animals

- Next, place explorers into small groups and have explorers share their ideas about a new containment boom with each other.
- Then, task each group with making a giant prototype of a containment boom (1-3 feet long). Explain that a prototype is the first version of an idea.
- Encourage explorers to incorporate an idea from each team members original design.
  - Remind explorers the boom needs to: trap oil from spreading and collect trash.
- Provide explorers with building materials (e.g., cardboard boxes, tinfoil, bubble wrap, and other recycled goods) to create a life-sized containment boom
- After the teams are finished building, have each team share their new prototype of a containment boom, explaining the special features that make it new and unique.

Materials List

Provided online:

- **Discovery Picture: Marine Biologist**
- **Discovery Picture: Oil Spill**
- **Discovery Page: Oil Spill**

Not provided:

- Feathers/pom pom balls
- Plastic animals
- Bin for water
- Water
- Oil
- Building supplies (e.g., jars, cardboard, rocks, blocks, construction paper)
- Blue food coloring
- Scoops or spoons

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Day 5&6 45 mins Coral Bleaching

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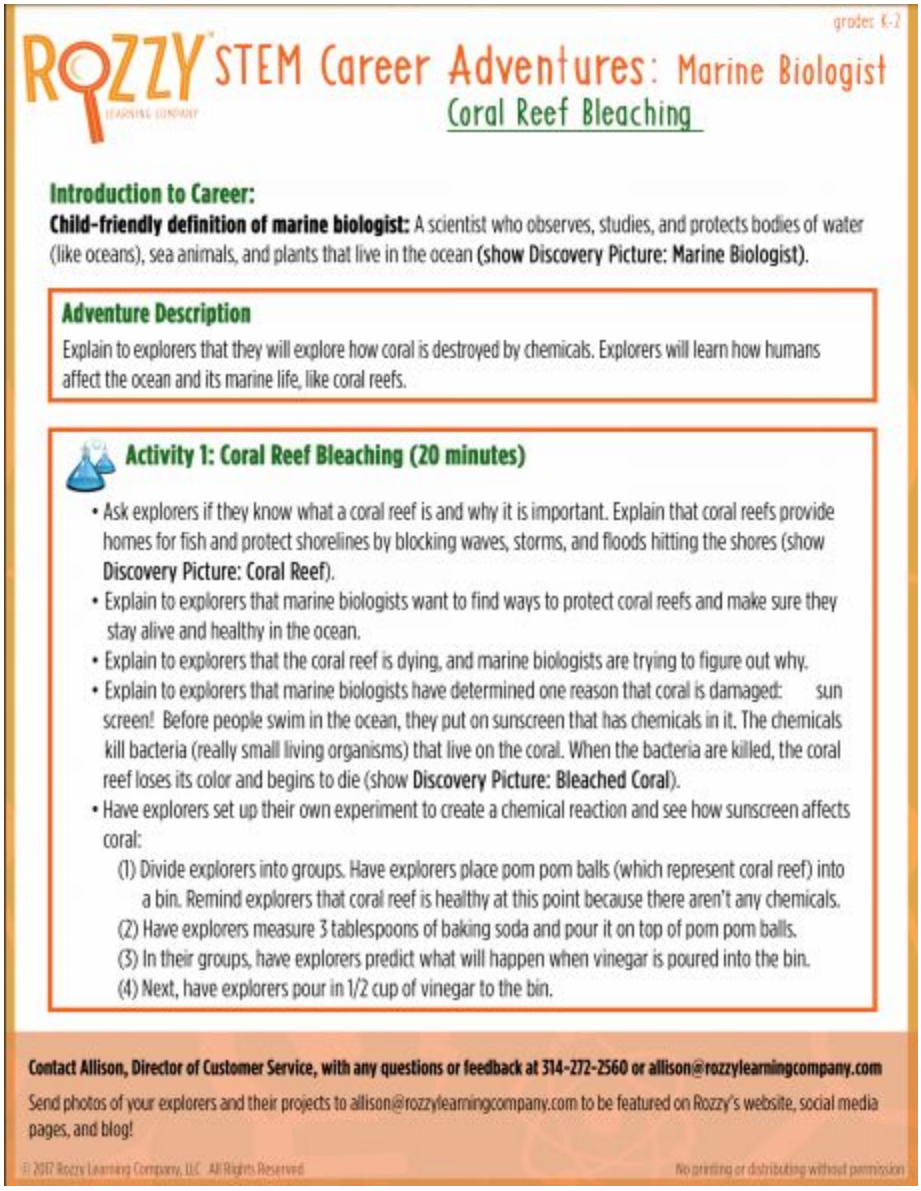

grades K-2

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STEM Career Adventures: Marine Biologist

Coral Reef Bleaching

Introduction to Career:

Child-friendly definition of marine biologist: A scientist who observes, studies, and protects bodies of water (like oceans), sea animals, and plants that live in the ocean **(show Discovery Picture: Marine Biologist)**.

Adventure Description

Explain to explorers that they will explore how coral is destroyed by chemicals. Explorers will learn how humans affect the ocean and its marine life, like coral reefs.

Activity 1: Coral Reef Bleaching (20 minutes)

- Ask explorers if they know what a coral reef is and why it is important. Explain that coral reefs provide homes for fish and protect shorelines by blocking waves, storms, and floods hitting the shores (show **Discovery Picture: Coral Reef**).
- Explain to explorers that marine biologists want to find ways to protect coral reefs and make sure they stay alive and healthy in the ocean.
- Explain to explorers that the coral reef is dying, and marine biologists are trying to figure out why.
- Explain to explorers that marine biologists have determined one reason that coral is damaged: sun screen! Before people swim in the ocean, they put on sunscreen that has chemicals in it. The chemicals kill bacteria (really small living organisms) that live on the coral. When the bacteria are killed, the coral reef loses its color and begins to die (show **Discovery Picture: Bleached Coral**).
- Have explorers set up their own experiment to create a chemical reaction and see how sunscreen affects coral:
  (1) Divide explorers into groups. Have explorers place pom pom balls (which represent coral reef) into a bin. Remind explorers that coral reef is healthy at this point because there aren't any chemicals.
  (2) Have explorers measure 3 tablespoons of baking soda and pour it on top of pom pom balls.
  (3) In their groups, have explorers predict what will happen when vinegar is poured into the bin.
  (4) Next, have explorers pour in 1/2 cup of vinegar to the bin.

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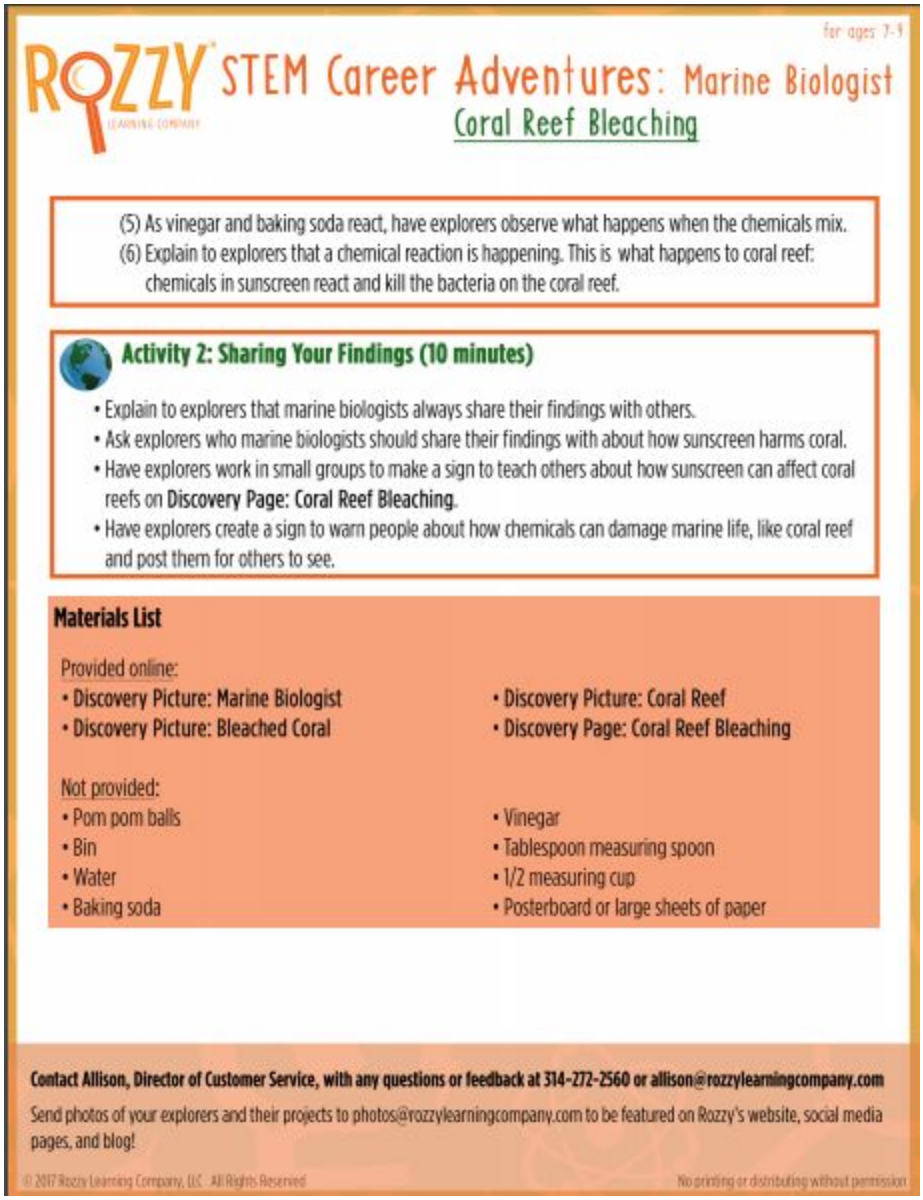

for ages 7-9

ROZZY STEM Career Adventures: Marine Biologist

Coral Reef Bleaching

(5) As vinegar and baking soda react, have explorers observe what happens when the chemicals mix.
(6) Explain to explorers that a chemical reaction is happening. This is what happens to coral reef: chemicals in sunscreen react and kill the bacteria on the coral reef.

Activity 2: Sharing Your Findings (10 minutes)

- Explain to explorers that marine biologists always share their findings with others.
- Ask explorers who marine biologists should share their findings with about how sunscreen harms coral.
- Have explorers work in small groups to make a sign to teach others about how sunscreen can affect coral reefs on **Discovery Page: Coral Reef Bleaching**.
- Have explorers create a sign to warn people about how chemicals can damage marine life, like coral reef and post them for others to see.

Materials List

Provided online:

- **Discovery Picture: Marine Biologist**
- **Discovery Picture: Bleached Coral**
- **Discovery Picture: Coral Reef**
- **Discovery Page: Coral Reef Bleaching**

Not provided:

- Pom pom balls
- Bin
- Water
- Baking soda
- Vinegar
- Tablespoon measuring spoon
- 1/2 measuring cup
- Posterboard or large sheets of paper

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Day 7 45 mins Creating the Coral Reef
Day 8 45 mins Life in the coral reef
Day 9 45 mins Investigating the Coral Reef

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grades K-2

ROZZY STEM Career Adventures: Marine Biologist

Tracking Sea Turtles

Introduction to Career:

Child-friendly definition of marine biologist: A scientist who studies and protects sea animals and plants that live in the ocean **(show Discovery Picture: Marine Biologist)**.

Adventure Description

Explain to explorers that they will discover how marine biologists track sea turtles to learn about their health. Marine biologists use the information they get to better understand turtles and help protect them. Explorers will get to track turtles and collect information about them.

Activity: How to Track Sea Turtles (30-45 minutes)

- Discuss how marine biologists work together to protect sea turtles who live all over the world. Marine biologists use tape measures to measure turtles' bodies and track their size and health. They also put special tags on their flippers so they can track where turtles swim (show **Discovery Picture: Sea Turtles**).

Part 1:

- Explain to explorers that they will search for sea turtles, tag, and measure the turtles to make sure they are healthy!
- Using the different sized **Rozzy turtle cutouts** provided, hide the turtles in different spots where the explorers cannot see them in plain site. Make sure to number the turtles before hiding them.
- Next, have explorers search for turtles. Once explorers have found the turtles, explain that marine biologists measure turtles to see how big they are. Have explorers record what turtle number they found and how big it is on **Discovery Page: Tracking Sea Turtles**.

Part 2:

- Explain that marine biologists often have to measure turtles at night because this when they come onto the shore.
- Hide the turtles again and then turn the lights out in the room. Provide explorers with flashlights (if available).
- Have students search for the turtles and record the length of their new turtle on **Discovery Page: Tracking Sea Turtles**

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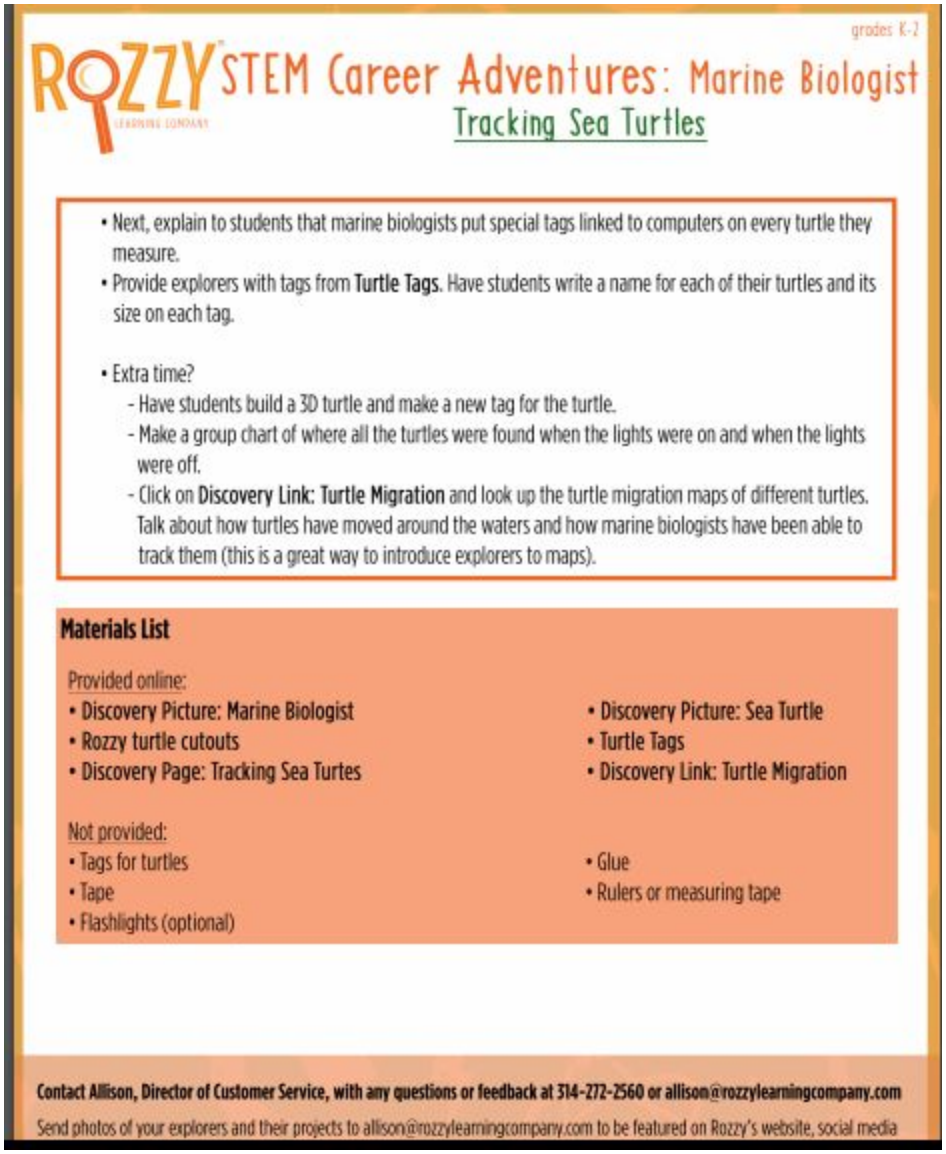

grades K-2

ROZZY STEM Career Adventures: Marine Biologist

Tracking Sea Turtles

- Next, explain to students that marine biologists put special tags linked to computers on every turtle they measure.
- Provide explorers with tags from **Turtle Tags**. Have students write a name for each of their turtles and its size on each tag.

- Extra time?
  - Have students build a 3D turtle and make a new tag for the turtle.
  - Make a group chart of where all the turtles were found when the lights were on and when the lights were off.
  - Click on **Discovery Link: Turtle Migration** and look up the turtle migration maps of different turtles. Talk about how turtles have moved around the waters and how marine biologists have been able to track them (this is a great way to introduce explorers to maps).

Materials List

Provided online:

- **Discovery Picture: Marine Biologist**
- **Rozzy turtle cutouts**
- **Discovery Page: Tracking Sea Turtes**
- **Discovery Picture: Sea Turtle**
- **Turtle Tags**
- **Discovery Link: Turtle Migration**

Not provided:

- Tags for turtles
- Tape
- Flashlights (optional)
- Glue
- Rulers or measuring tape

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After viewing the National Core Arts Standards: http://www.nationalartsstandards.org/ I believe the following visual arts and theatrical art standards apply. What makes me so excited about this

project is the collaborative effort to create this art piece, and the interactive play that the students will partake in.

References

Rozzy Learning,https://www.rozzylearningcompany.com/