

Tiny Tots! Jr Mad Scientist

Theme #4: Deep Sea Exploration

Day 1: Hydrothermal vents vs marine snow

Time: 1 hour (about 45 minutes for activities)

Group Size: 1-15 toddlers (1 toddler requires 1 parent)

Grade Levels: pre-school/kindergarten (age 2-4)

Location: Sahm/allotted facility

Overview of Activity

The first of 4 activities goes over the source of energy where the light of the sun doesn't shine anymore. You will be demonstrating different effects of a hydrothermal vent and a volcano, similar in some ways, and very different in other ways. A hydrothermal vent is where magma meets seawater and releases mineral rich water that replenishes the seafloor for those producers/primary consumers that start the food chain down in the deep. While they do have magma to thank for this to take effect, hydrothermal vents are beneficial to organisms in a different way than volcanoes. Volcanoes are different erupting and releasing magma which eventually turns into lava and adds to the earth's layers.

Learning Focus

1.1 Demonstrate increased ability to investigate and compare characteristics (size, weight, shape, color, texture) of earth materials such as sand, rocks, soil, water, and air.

Introduction

5 min Introduction to the program includes

- Welcoming the Jr naturalists with a **song** and setting the mood for learning!
- Toddler friendly songs
- Announcing the activities! /Whiteboard
- Two activities, with Storytime in between or one large activity with Storytime

Activity #1 Hydrothermal vent

- 10-minute run time

Materials:

- Sand or dirt as seafloor bottom

- Warm water
- Flask big enough to see the effects
- Alka-Seltzer
- Sugar
- Yeast
- Large deep sea food chain
- Balloon
- To start the class, you explain the food chain for the littles, and you have them all watch as you lay out the food chain explaining how a hydrothermal vent gives food to so many animals. Then take and walk through the different parts of a hydrothermal vent and explain the concept to the littles and use words that the kids would understand (underwater volcano, hot water, minerals etc.) The hydrothermal vent will need dirt or substrate, yeast, sugar, and lastly warm water and Alka-Seltzer and as quicky as you can put the balloon on to see the gas expand.

Activity #2 Marine snow demonstration

- 15-minute run time

Materials:

- Big clear beaker
- Vegetable oil
- Food coloring
- Water
- Corn syrup
- Salt, large crystals

Using the previous demonstration, let the kids make their own conclusions as to the similarities and differences between the two. The demonstration, whichever activity is done first, is to show different ways to achieve energy and nutrients in the deep abyssal zone where the sun doesn't shine. Add in order, corn syrup, water with food coloring, Vegetable oil, and when you're ready add the salt that will sink to the bottom or sit in the middle of the water, to make it more exciting throw in a hydrothermal vent and add an Alka-Seltzer tablet. Watch and explain how the “snow” or dead algae material makes its way down.

Extended play!

To finish out the hour, Jr Naturalists can engage in extended play time to play more of the activities or play in the playscape or use the provided toys.

Day 2 Bioluminescence/ blacklight

Time: 1 hour (about 45 minutes for activities)

Group Size: 1-15 toddlers (1 toddler requires 1 parent)

Grade Levels: pre-school/kindergarten (age 2-4)

Location: Sahm/ allotted facility

Overview of Activity

Day 2 will focus on the ability of Bioluminescence, living light and how the deep sea doesn't have access to sunlight, has high pressure and is extremely cold but even with all those takeaways, life is still able to flourish and create its own living light.

Learning Focus

1.4 Indicate knowledge of the difference between animate and inanimate objects, providing greater detail, and recognize that living things (humans, animals, and plants) undergo biological processes such as growth, illness, healing, and dying.

Introduction

5 min Introduction to the program includes

- Welcoming the Jr naturalists with a **song** and setting the mood for learning!
- Toddler friendly songs
- Announcing the activities! / Whiteboard
- Two activities, with Storytime in between

Activity #1 Florescence

- 10-minute run time

Materials:

- Florescent Rocks
- Blackout Curtains
- Blue light/blacklight
- Glow toys
- Boneyard area
- chemiluminescence

Explain how some animals in the deep abyss make their own living light, bioluminescence compared to other animals and objects reflect light back at us known as fluorescence. Have them look at the rocks, the bottle of tonic water. And even their own clothes and see what fluoresces back at them. Then show them the chemiluminescence chemical reaction which is like what happens inside living organisms like the lantern fish or certain plankton.

Storytime- how deep is the sea/ gilbert in deep

- 10-minute run time

Activity #2 make your own deep-sea creature

- 10-minute run time

Materials:

- Toilet paper rolls
- Cut straws
- Pipe cleaners
- Cotton balls
- Pom pop balls
- Construction paper
- Googly eyes
- Glue bottles/ glue sticks
- Scissors
- Markers
- Cut colored tissue paper
- Neon crayons

Make your own deep-sea critter as creative as you want to be, either 2D or 3D and use the materials to make him fluoresce or have parts that light up on its own imagination. Take them home afterwards!

Extended play!

To finish out the hour, tiny tots can engage in extended play time to play more of the activities or play in the playscape or use the provided toys.

Day 3 How Deep is the Sea??

Time: 1 hour (about 45 minutes for activities)

Group Size: 1-15 toddlers (1 toddler requires one parent)

Grade Levels: pre-school/kindergarten (ages 2-4)

Location: Sahm/ allotted facility

Overview of Activity

Learning Focus

2.1 Demonstrate an increased awareness that objects and materials can change in various ways. Explore and describe in greater detail changes in objects and materials (rearrangement of parts; change in color, shape, texture, form, and temperature).

Introduction

5 min Introduction to the program includes

- Welcoming the Jr naturalists with a **song** and setting the mood for learning!
- Toddler friendly songs
- Announcing the activities! / Whiteboard
- Two activities, with Storytime in between

Activity #1 Deep Sea Poster / blubber glove Ziplock bags

- 10-minute run time

Materials:

- Container of water
- Container of oil
- Container Crisco
- Container of rocks
- Container of ice

Instructors will lead the kids talking about the Arctic and arctic mammals like polar bears or whales. They have a layer of fat we call blubber and well show them how it keeps them warm with a water bucket of Ice and a Ziplock baggie of Crisco. The Crisco acts as a layer of fat or blubber to keep these animals warm. Some of these animals, because they live in the arctic or hunt so deep, have to have this protective layer.

- **Storytime-** 10-minute run time

Activity #2 Build an ROV

- 15-minute run time

Materials:

- Plastic bottles
- Toilet paper tubes
- Propellers
- Christmas light bulbs
- Pipe cleaners
- construction paper
- Toothpicks
- Tape

This activity talks about how we get to the bottom of the sea without people in submarines we send remote operated vehicles or ROVs. They get to build an ROV and if they want, they get to try it in the water! And see if it sinks or swims in the water!

Extended play!

To finish out the hour, tiny tots can engage in extended play time to play more of the activities or play in the playscape or use the provided toys.

Day 4 Shark Day! Fall version

Time: 1 hour (about 45 minutes for activities)

Group Size: 1-15 toddlers (1 toddler requires 1 parent)

Grade Levels: pre-school/kindergarten (2-4)

Location: Sahm/ allotted facility

Overview of Activity

Day 4 focuses on the cool advantages of sharks! We talk about ampule of Lorenzini, their skin and how it feels, we might be able to touch sharks depending on shark feeding schedule and size of kids, and overall, we will learn about their awesome ability to smell.

Learning Focus

1.1 Identify characteristics of a greater variety of animals and plants and demonstrate an increased ability to categorize them.

Introduction

5 min Introduction to the program includes

- Welcoming the Jr naturalists with a **song** and setting the mood for learning!
- Toddler friendly songs
- Announcing the activities! / Whiteboard
- Two activities, with Storytime in between

Activity #1 Shark hats! (possible touching??)

- 10-minute run time

Materials:

- Shark hats to color
- Tape
- Stapler
- Copies of shark hats
- Crayons/markers

Instructors will make shark hats and have the kids color the pieces and you put it together creating a whole classroom of sharks! While this happens if the class size is large enough, you may be able to touch the sharks if the kids are tall enough or just bring out the shark skin for them to touch.

Storytime-10-minute run time

Activity #2 Banana shark

- 15-minute run time

Materials:

- Plastic flasks / spray bottles
- Index cards
- Essential oils fall edition (pumpkin spice, mint cinnamon, vanilla, pine tree, etc)
- Cards with the actual smell on them

You mix the essential oils in the flasks, or you have it mixed in the spray bottles, and you spray the card and hand each one to one of the kids to have them smell and guess the smell! You play until you run out of cards and explain how a shark can smell one drop of anything inside an Olympic sized pool. They have an amazing sense of smell, and they can sense electrical currents in water.

Extended play!

To finish out the hour, tiny tots can engage in extended play time to play more of the activities or play in the playscape or use the provided toys.