Tiny Tots! Jr Mad Scientist
Theme #1: Let's get Physical!

Day 1: Conductivity

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 activity days will focus on open and closed circuits! How electricity passes through humans, and we have a current and how it can pass through other objects and what conductivity is. This can connect to how sharks are able to sense electrical currents.

Learning Focus

1.5 Make predictions and check them, with adult support, through concrete experiences.

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 or one large activity with Storytime

Activity #1 Energy stick conductors

- 10-minute run time

Materials:

- Wooden dowels
- Water cups
- Potatoe

- Metal spoon
- Rubber tube
- Watermelon
- Paper cup

Set up an energy stick conductor station (two depending on class size) and have the kids walk up with different conductors such as a spoon or a Potatoe or even water and see what works as a conductor and what doesn't. Focus on them trying different objects to create a reaction from the energy stick and have them learn through trial and error. The fun sound it creates tells us if the object is a good conductor or not.

Storytime- anything by Nikola tesla

- 10-minute run time

Activity #2 Humans and conductivity

- 15-minute run time

Materials:

- Energy sticks
- Cups of water

Now that the kids have an idea of what a good conductor is, explain and demonstrate how we as humans have an electrical current and work as great conductors too. You can even go into sharks and how they can sense electrical currents throughout the water with Ampullae of Lorenzini. These are little sensory organs that are layered on the tip of a shark's nose to help find food.

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 2 Magnetic Friends

Let parent know for pacemakers/ICDs, magnets in use

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 invisible magnetic field of magnets. Magnets and magnetic fields depend on the material and how magnetic they are, comparing magnetic strength and if the magnetism is semipermanent, weak or if they are always permanent.

Learning Focus

1.1 Demonstrate increased ability to observe, investigate, and describe in greater detail the characteristics and physical properties of objects and of solid and nonsolid materials (size, weight, shape, color, texture, and sound).

K-PS2-2. Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.

Introduction

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- Toddler friendly songs
- Announcing the activities! / Whiteboard
- Two activities, with Storytime in between

Activity #1 What's a magnet?

- 10-minute run time

Materials:

- Hand magnets (p lab or ordered new ones)
- Magnetic rocks from p lab
- Iron fillings
- Paper clips
- Screws
- Wood
- Other nonmagnetic metals
- Small magnets

Instructors will introduce the idea of magnetic fields a how magnets create attraction in a magnetic field. Certain items we use every day have a magnetic pull and of course certain items don't. Let the kids use the magnet wands and use it around set items like paper clips and wood pieces and see what pulls and what pushes and what isn't magnetic.

Storytime- magnet book

- 10-minute run time

Activity #2 make your own magnet pals

- 15-minute run time

Materials:

- Cut out foam shapes
- Cut out animal shapes
- Glue or adhesive
- Small magnets to attach to foam
- Googly eyes

Kids will create their own animal, either a bird, a fish, or a mammal, and connect a magnet to them so they can have a magnet pal. It can either go on their shoulder, their fridge, just NOT in their mouths! Instructors will supply the crafts like foam animal parts and shapes and will help will magnet attachment and googly eyes.

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 liquid vs Solid Oobleck

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

Day 3 will focus on solids vs liquids. The kids are going to overview the differences between stages of matter such as solid vs liquids. The activities will focus on a non-Newtonian fluid such as Oobleck. The Kids will have their own sandwich baggies filled with Oobleck and possibly see other stages of matter.

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 liquid? Solid? In between??

- 10-minute run time

Materials:

- Container of water

- Container of oil
- Container Crisco
- Container of rocks
- Container of ice
- (dry ice or Alka-Seltzer)

Instructors will lead the kids in a demonstration of the different stages of matter, particularly water as they run through a solid, a liquid, and a gas. Use multiple demonstrations and allow the kids to handle the liquids and solids for themselves. You can use the whiteboard to demonstrate the differences, allowing time to explore that it is the same type of matter.

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

Activity #2 make your own Oobleck

- 15-minute run time

Materials:

- Cornstarch
- Water
- Plastic sandwich baggies
- Big container for class demonstration
- Ketchup bottle

This activity talks about non-Newtonian fluids that when stressed or pressured have solid qualities but at rest, have liquid qualities. To reduce the mess have them make the mixture in plastic Ziplock's so they can experience the feel without making a mess and can take it home. Make a big batch at first to demonstrate and then have parents help the tots make their own. If they want to play and feel the Oobleck they can come to the big container and touch it with your supervision and reduce mess. The mix is a 3/1 ratio of 3 parts cornstarch to 1 part water, slowly add more water if needed don't overdo the water because then you end up with just a cornstarch slurry.

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 Density! (DIY LAVA LAMP)

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 idea of density and polarity. Explaining the terms in such ways where the kids understand the concepts rather than the word itself. ex) some forms of matter or materials are thicker(denser) than others such as water vs oil or soap and will layer over one another. With this understanding you will demonstrate the differences of density in an overall presentation and then the kids will make their own lava lamps.

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).

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- Two activities, with Storytime in between

Activity #1 Density Demo

- 10-minute run time

Materials:

- Water

- Oil
- Food coloring
- Soap
- Corn syrup
- Rubbing alcohol

In a large jar so everyone can see, you explain the idea of density, defining the word without going to into depth and keeping it brad so they understand the concept rather than the term, matter or certain materials are thicker than others, so it sits on top of one another. You can read a story while they settle, but if you do it in the right order, they should be fine to settle quickly.

Storytime-10-minute run time

Activity #2 Make your own lava lamp!

- 15-minute run time

Materials:

- Plastic bottles
- Alka-Seltzer
- Water
- Vegetable oil
- Salt

You hand premeasured water, vegetable oil that's premixed with food coloring and salt with a quarter piece of an Alka seltzer. Help where is needed so premeasure everything to reduce mess and do not overfill to let bubbles out and only cap when the bubbles are done so you can invert the bottle and see the mixing and lava lamp effect.

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.