**Standards and Essential Questions:**

Essential Question: How do organisms live, grow, respond to their environment, and reproduce? Students will learn about what characteristics define an organism.

Standard 4: Major Understandings:

1.1a Animals need air, water, and food in order to live and thrive.

1.1b Plants require air, water, nutrients, and light in order to live and thrive.

1.1c Nonliving things do not live and thrive.

1.1d Nonliving things can be human-created or naturally occurring.

Describe the life processes common to all living things.

Major Understandings:

1.2a Living things grow, take in nutrients, breathe, reproduce, eliminate waste, and die.

\*Constructing explanation and designing solutions -- Early in their science education, students need opportunities to engage in constructing and critiquing explanations. They should be encouraged to develop explanations of what they observe when conducting their own investigations and to evaluate their own and others’ explanations for consistency with the evidence.

**Deep Understandings**?

Students **apply** scientific thinking to understanding that organisms live, grow, respond to their environment, and reproduce.

Students will **conduct** an investigation, record and analyze results

Students will **reflect** on new learning and **compare** to prediction

**Materials for teacher**

Mystery Matter

Hand Lens

Sugar (2 tablespoons)

Recycled Pop bottles/water bottles

15 inch balloons

Water (1 cup VERY warm water)

Mystery Matter packet

Wax paper (15cm by 15cm)

**Hook:** “I” have just received a supply of mysterious matter that I would like you to

examine.” Scientists are trying to determine if these are organisms. I would like to know what you think…”

Review organism (Living vs. non-living): For the purposes of this activity, a living thing is something that is currently alive or has once been alive, like a plant. A nonliving thing is something that is not alive and has never lived, like a rock.

Give students yeast, toothpicks, and hand lens and have them predict whether or not the mystery “matter” is living or non-living and describe WHY they decided on their prediction. (Put in RED circle)

Discuss as a class some characteristics of living organisms….

**Discovery:** How can we determine if this “matter” is living or non-living?

Follow up by telling students they will test the matter to help determine if it is alive by providing ”it” with water and an energy source and seeing what occurs.

Give student pairs a bottle, mystery material (1 packet size), sucrose (2 tablespoons), water (1 cup of VERY warm water), balloon and observation sheet

Prepare model and record observations in yellow circle.

Teacher will prepare a control bottle as well (just water, sucrose (sugar), and balloon

**Closure/Conclusions:**

Have students discuss the results and what happened to what they PREDICTED would happen.

Discuss as a class. And Reveal Mystery Matter!!!

Reflection and next steps:

**Observe Carefully: *Use your senses to be aware of what is going on and record your data.***

* Observe what is happening
* Collect, record, and interpret your data (information you gather from your senses)
* Measure
* Make inferences (statement to explain the observations)
* Manipulate and/or use numbers and formula’s if necessary
* Replicate (repeat) when possible

**Stop and Think:** ***Predict what will happen:***

* What do you already know about this topic?
* What is your prediction or hypothesis of what will happen or what will occur and WHY?

**Go right ahead:** ***Make a conclusion based on what you know and what you have observed.***

* Interpret your data by analyzing the information you have collected and describing what occurred and why
* Identifying variables: characteristics of objects or events that stay the same (control) or change (variable)
* Compare what you thought would happened to what actually happened and explain your results
* Communicate your findings either visually or with a presentation

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