**EduTOOLBOX – Pre-K Science Experiment Lesson Plan**

|  |  |
| --- | --- |
| **Lesson Title:** | Baking Soda and Vinegar Balloon |
| **Lesson Objective:** | Students will explore how matter exists in different states by observing and discussing what happens when combining baking soda and vinegar. |
| **Aligned Standard(s):**  **(TN-ELDS)** | **Primary: PK.PS1.01b Demonstrate an awareness that matter exist in different states (i.e. solid and liquid) and that matter changes as a result of changes in it’s environment.**  PK.ETS1.01a Use senses to gather, explore, and interpret information.  PK.ETS.1.01b With modeling, prompting, and support, record and organize data using graphs, charts, science journals, etc., to communicate conclusions regarding experiments and explorations.  PK.ETS.1.01c Make predictions based on observations and prior explorations.  PK.PS1.01a Describe and categorize objects based on their observable properties |
| **Assessment Method:** | Teachers will document student learning using photos, videos, and anecdotal notes. |

|  |  |
| --- | --- |
| **Intentional Vocabulary:** | Inflate – *when something inflates, it fills with air and becomes larger. In this experiment, the combination of baking soda and vinegar will release air and cause the balloon to inflate.* |
| **Materials Needed:** | Balloons (one per child)  Baking soda (2 tablespoons per child)  Empty small water bottles (one per child)  Vinegar (1/3 cup per child)  funnel |

|  |  |  |
| --- | --- | --- |
| **Lesson Procedures and Questioning** | | |
| **Lesson Section** | **Detailed Procedure** | **Questioning Sequence** |
| **Introduction:** | Display the materials to the students. Remind students that scientists make predictions before experimenting. Guide students through the questioning sequence and ask them to write and draw their predictions in their science journal. | * What materials do you think we will use today? * I want to *inflate* my balloon? How do I do that? * How could I *inflate* my balloon without touching my mouth? * How could I use these materials to *inflate* my balloon? * What do you predict will happen if we mix the vinegar and baking soda? |
| **Exploration:** | Use the funnel to put 2 tablespoons of baking soda into each balloon (you may wish  to do this ahead of time). Fill each empty water bottle with 1/3 cup vinegar.  Carefully fit a balloon over each bottle opening. Have children count down together,  then lift their balloon up so that the baking soda falls into the bottle. Watch as the  balloon inflates!  Explain the concept of inflation to students throughout their explorations. | * What is happening to your balloon? * What does the vinegar and baking soda mixture look like? * Why do you think the balloon is changing? * What do you think if we put different liquids in the bottle? * What will happen if I take the balloon off of the bottle and tie it? |
| **Closing:** | Lead a discussion to reflect on student learning. Explain that these materials will be at the science/exploration area during center time.  Encourage students to draw and write their observations in their science journals, reflecting on their predictions and experiment results. | * Were our predictions about the mixture correct? * What are some other ways that we can *inflate* balloons? * What are some other ways we could use the baking soda and vinegar mixture to inflate things? |

|  |  |
| --- | --- |
| **Extending the Learning:** | Place the materials in the science/exploration area allowing students to explore independently. |
| **Considerations for Learning:**  *possible challenges, management issues, and safety considerations* | *Remind students of safety rules for science experiments before beginning the lesson. Remind students that nothing should ever go in their mouth or ears unless specifically instructed to do so. Remind students that balloons can easily be popped and will make a loud noise if they pop. They need to avoid sharp objects. Students may or may not have ever smelled vinegar and may be surprised by the strong smell.* |