JEdSTEM at-Home Lesson 2 - Creation

Overview:
The JEdSTEM Initiative is dedicated to developing engaged, curious, and innovative Jewish minds for the modern world. This lesson is designed to be done at home as combined parent-child learning and features a simple STEM experiment, Torah story and thought-provoking discussion questions.

Experiment Introduction	**Supplies Needed**
In today's lesson, we are learning about the Creation story from the Torah. Then, we are going to try to create a new substance out of materials you have at home.	
Story Summary - Creation	
In the Creation Story, G-d starts with a blank slate and then each day creates something new to add to the developing Earth. The order goes like this: *At the very beginning there was nothing, and then G-d decided to change that.* *On the first day, G-d said "Let there be light" and then there was light.* *On the second day, G-d separated the Heavens from the Earth. So there was sky and the seas.* *On the third day, G-d separated the lands from the seas, so that there were big areas of dry land, and also big oceans.* *On the fourth day, G-d made the sun, the moon and the stars.* *On the fifth day, G-d created the birds, animals and fishes.* *On the sixth day, G-d created humans.* *On the seventh day, G-d looked over what had been created and was happy with it. So G-d rested. This was the first Shabbat.* This Creation story shows us how each day G-d built on what G-d made the day before and created new and amazing things on Earth.	

Genesis 1:3-2:3. For a more detailed version of this story follow this Link	
Questions	
• Which day of Creation do you think is the most important? • Were you surprised by something that happened one of the days?	
Experiment Procedure	
Disclaimer: This experiment requires adult supervision for children under the age of 10. If not done safely, this experiment can cause injury to individuals and environments. Please keep materials and products away from faces, especially eyes and mouth. *All of the products of the experiment can be cleaned with dish soap and water.* The lesson's story talks about how G-d created the world from nothing in just six days, but what existed before those six days? We will probably never know. In the meantime, today we can create a unique substance that may be similar to the world before G-d created the world. 1. Get all the materials ready by having them nearby. 2. In the Bowl pour a layer of Glue so there is a thin layer covering the bottom surface of the Bowl. 3. Optional: If you want colored slime you can add 3-5 drops of Food Coloring 4. Add 1 teaspoon of Baking Soda 5. Pour in 2 tablespoons of the contact lens solution and stir slowly. The mixture should begin to harden, becoming stringy. 6. Continue to mix until it starts to form a solid ball of slime. Once this happens you can pick it up and start playing with it.	• Bowl or Container • White Glue • Baking Soda • Contact Solution • Spoon Optional: • Food Coloring • Gloves
Experiment Explanation	

<u>How do you think this works?</u> There are three states of matter, solid, liquid and gas. Most liquids flow all the time, even if it is really slowly. They also take the shape of the container they are in. These types of liquids are called “Newtonian fluids,” because Sir Isaac Newton was the one who first noticed that they do this. Water is a great example of a Newtonian fluid because it can flow easily, and moves into whatever container I put it in *If you want to see this in real life you can pour some water into a cup to show how it behaves.* Slime is an interesting substance because it doesn’t behave exactly like a Newtonian fluid. It is actually a NON-Newtonian fluid. These are substances that are sort of liquid and sort of solid. When you are playing with slime, you can feel how it sometimes is really hard to move like a solid, and sometimes it flows into strings really easily. <u>We just defined what kind of fluid Slime is, but how is it actually formed?</u> Slime is a polymer. Polymers are molecular structures with lots of similar units bonded together. Some polymers you might know are rubber and many types of plastic. Glue is the main polymer ingredient in Slime, because it behaves like a liquid. When it mixes with the boric acid, which is in the contact solution, the boric acid activates the glue to form a tight pattern of molecules. This makes it harder for the glue to flow and makes it into slime.	
Expand the Experiment	
So you did the experiment and want to know more than you can do? Options: ● Mix a batch of slime with glitter or glitter glue ● Add shaving cream to create fluffy slime. ○ The shaving cream should be added after the food coloring and before the contact solution.	

Wrap Up Questions	
What do you think about the experiment? How does it feel to create something new out of the materials we started with?	