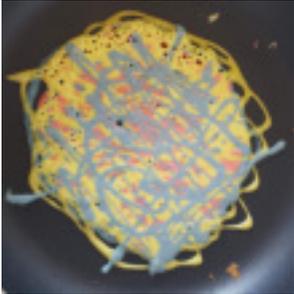


Designing a Pancake: Science You'll Flip For!



This activity is made possible thanks to funding from Cognizant through the Making the Future education initiative.

Transform your kitchen into a learning laboratory. Use everyday materials, common ingredients and simple kitchen tools to help young learners develop important life skills and explore the wonders of science.

Whether you make pancake batter from scratch or from a premade mix, you can start your day with some tasty science! The process of cooking up a stack of fluffy pancakes is more than just a delicious life skill; it's an opportunity for science exploration and discovery. So don't just settle for classic circular pancakes. Use this opportunity to add a pinch of science, a dab of creativity, and a whole lot of fun to design works of edible pancake art!

What They'll Learn

- This activity benefits young learner's cognitive development by encouraging problem-solving skills and following instructions.
- Young learners build science knowledge as they experiment with the phases of matter, discover the physical properties of materials, and observe physical and chemical changes in the ingredients.
- Through inquiry, investigation and experimentation, children will practice important mathematical concepts such as counting, measuring and sequencing.
- Physical movements such as measuring, pouring, mixing and squeezing provide young learners with an opportunity to develop large and fine motor skills.

What You'll Need

Pancake batter (from a box or your favorite recipe)

Nonstick pan or griddle

Butter or oil

Plastic squeeze bottle

(The number of plastic bottles you will need depends on the number of different colors you want to make. As an alternative, try pouring the batter into a plastic Ziploc bag and sealing it. Snip a hole in one of the corners of the bag to pipe batter into the pan or griddle.)

Spatula

Food coloring

Several small mixing bowls

Mixing spoons

White paper

Masking tape

Colored markers

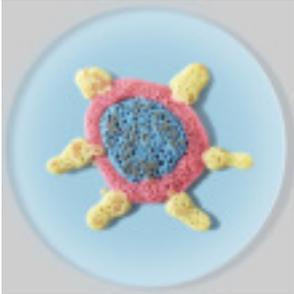
Pen or black Sharpie marker (optional)

Hand mixer (optional)

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What to Do

1. Use colored markers on a piece of paper to sketch out a picture that you and your child want to design for your pancake. How many colors will you need? What are different shapes, sizes, letters or numbers that you could use in your design?
2. Prepare your favorite pancake batter recipe. The batter will eventually be poured into squeeze bottles so make sure the batter is slightly thinner so it's easier to pass through the nozzle of each squeeze bottle. Make enough batter for all the different colors you want to make.
3. In a small mixing bowl, pour a portion of the pancake batter and mix it with the food coloring of your choice. Repeat this for all the colors you want.
4. Using the masking tape and pen or markers, label each bottle with the name of the colors you'll use. If your child is old enough, encourage them to practice writing each color.
5. Fill each bottle with colored pancake batter that corresponds with the appropriate label.
6. Lightly oil the pan or griddle and set to low heat.
7. An adult should be the one to check if the pan or griddle is warm. Once it's warm, use the squeeze bottles to design your pancake on the pan as was sketched out on the paper. Feel free to be creative and add new design elements.
8. Allow the pancake batter to cook until all the colors are bubbling. Then gently use a spatula to flip the pancake over.

What's Happening?

Making pancakes involves some amazing chemical reactions! A chemical reaction is the process where two different substances are combined to create an entirely new substance. In this case, different ingredients (substances) used in a pancake recipe (such as milk, flour, eggs) are mixed together to make a new substance (pancakes). However, once a chemical reaction happens it cannot be reversed, therefore, once you make pancakes you cannot change them back into the original ingredients (milk, eggs, flour, etc.).

Chemical reactions begin to happen as soon as you begin mixing ingredients. When you combine an acidic ingredient (for example, buttermilk) with a base ingredient (a leavening substance such as baking soda or baking powder) you create a chemical reaction that will result in carbon dioxide (air bubbles) once you begin to cook your pancakes.

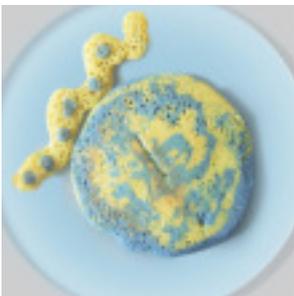
Flour is another ingredient that helps create chemical reactions. When flour is added, the batter becomes stronger and stretchier. During the cooking process, the air bubbles begin to form, which are then trapped by the stretchy batter. Those trapped air bubbles are what make pancakes so fluffy and delicious. Try counting each bubble with your child as they pop!

However, if you decide to forgo the flour in your pancakes, you can substitute it with other ingredients such as rolled oats. Your pancakes will be slightly thinner, but no less delicious!

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Finally, when you add pancake batter onto a pan or griddle, you're applying energy (in this case, heat). This energy (heat) is what changes the liquid batter into the solid pancakes we eat.

Questions to Ask

- Talk to your child about what they notice. Ask them to describe each stage using as many of their five senses as possible.
- What do pancakes look like before and after they are cooked?
- What do you think makes pancakes so fluffy?
- How did the bubbles get there?
- Are all pancakes round? Why or why not?
- Where do the ingredients come from?

Tips

- Keep a toothpick nearby to unclog any pancake batter that gets stuck on the tip of the squeezed bottle nozzle.
- Maintain the heat setting on low to prevent the pancakes from browning.
- Outline the shapes or drawings before filling them in with batter. It will give you some control of where the batter spreads to.
- Use the edge of the spatula to cut off and clean up the edges of your pancake in case the outer lines turned out differently than what you wanted.

Let's Read Together

Pancakes, Pancakes! by Eric Carle

Pancakes for Breakfast by Tomie dePaola

Bunny Cakes by Rosemary Wells

If You Give A Pig A Pancake by Laura Numeroff

Mr. Wolf's Pancakes by Jan Fearnley

Marsupial Sue Presents "The Runaway Pancake" by John Lithgow

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