



BOYS & GIRLS CLUBS

Virtual Module: Wacky Science

This module is written for staff to guide youth through home-based STEM experiences.

Ages

6 & Up

1

week

Summer Brain Gain STEM

Introduction



INTRODUCTION

How To Use This Module

This module is written for staff to guide youth through home based STEM experiences. Youth will need some support at home to safely do all experiments.

Staff can send home copies of these activities or post them online. It would be helpful to provide a small box of supplies at the beginning of the week to ensure that youth are ready to participate.

Provide a place for youth to upload pictures or recordings of their work to share with others. This is a key part of building and maintaining connection with youth and their families. It will also allow youth to inspire one another. MyFuture is a good place for supporting that kind of communication.

Overview	Youth will explore science in the kitchen, exploring flavor, density, and chemical changes in ingredients.
Guiding Questions	How can science help you understand what happens in the kitchen? How can you creatively communicate what you have learned with others?
Culminating Activity	Youth will create their own science demonstration video to share with their Club or Youth Center.
Day 1	Ice Cream Design: Exploring Flavor In this activity, youth will design their own ice cream flavor after exploring different tastes.
Day 2	Two Parts Chocolate Playing with math has never been so delicious! Youth will create different treats by changing the ratios!
Day 3	Whip it: make your own butter! Youth will cause a chemical change in cream to create butter.
Day 4	Plan Your Own Science Video Youth will plan a video presentation to share a fun science activity.
Day 5	Create Your Own Science Video Youth will record and upload their own science demonstration.

Extensions

Extensions for individual youth are included daily in each activity.

Clubs and Youth Centers could also use this as an opportunity to feature local chefs or scientists to provide fun or exciting demonstrations. This would allow youth to view some of the more dangerous or expensive activities that included dry ice and other hard to find supplies.

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Wacky Science

ICE CREAM DESIGN: EXPLORING FLAVOR

In this activity you will design your own ice cream flavor!

Who doesn't love ice cream! There are so many flavors and combinations of flavors you can find with this delicious creamy food. Can you think of some interesting flavors you have tried? Have you found some ice cream flavors you don't like that much? Let's try combining different foods to create creative, exciting, or even yucky ice cream!

THE CHALLENGE

Step 1: Getting Started

- First, how do we know if we like a food or not? Your body uses your tongue and nose to taste food. Check out this video to learn more about how that works. [youtube.com/watch?v=C4rdqXXzPGU](https://www.youtube.com/watch?v=C4rdqXXzPGU)

Step 2: Start Creating

- Look around your house for food you can add to your ice cream. Try to find something that is salty (pretzels, peanuts), bitter (dark chocolate, coffee), sour (Sour patch kids candy, lemon juice), and sweet (cookies, fruit).
- Which of these could go together to make a new favorite flavor? Which would you mix and never even think about trying? Create a list of ideas.
- Using small bowls and a spoon, mix a variety of ice cream flavors from your list of ideas.
- Which one is your favorite? If you were trying to sell it to others, what would be a good name?
- Share your creation with your family!

Step 3: Time to Reflect

- Which was your favorite flavor? What will you name it?
- Which flavor surprised you the most?
- How did you decide on a name for your ice cream? Do you think the name would encourage people to try your new flavor?

SUPPLIES

- Vanilla ice cream
- Variety of food to flavor ice cream
- Small bowls and spoons for mixing



Photo credit:

1. <https://www.piqsels.com/en/public-domain-photo-zkill>

EXTENSIONS

- Did you know engineers help make new ice cream flavors? Find out more about that here: [youtube.com/watch?v=qv-kCtMCFcc](https://www.youtube.com/watch?v=qv-kCtMCFcc)
- Want to make your own ice cream? Let's try it! <https://www.kidstir.com/ice-cream-in-bag>.

TWO PARTS CHOCOLATE

An activity from [Bedtime Math](#), modified with permission

Playing with math has never been so delicious!

Ratios help us understand how amounts are related. It is a way to compare numbers. Let's watch this video to better understand: [youtube.com/watch?v=rgYqXUzopKM](https://www.youtube.com/watch?v=rgYqXUzopKM). Ratios are also important in the kitchen when you are cooking! We use them to compare two numbers. For example, if I am making cheese sauce and I want it very cheesy, I might use one-part milk and one-part cheese. There would be the same amount of both ingredients. But, if I needed to share with a lot of people, I might make it thinner. I would make sure my ratio is 2:1—two cups of milk with only one cup of cheese. It would be much thinner and go on a lot more nachos. Ratios help you in the kitchen. We can use them to compare amounts of ingredients.



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1. <https://www.piqsels.com/en/public-domain-photo-jjfbn>

SUPPLIES

- **Safety Note: This activity requires melting chocolate, so it is important to ask a favorite grown up for help.**
- **Chocolate chips**
- **Milk and/or heavy cream**
- **Measuring cups, spoons, and a bowl**

THE CHALLENGE

Step 1: Getting Started

- Now, let's take time to taste some ratios! Choose one of the chocolate treats on the bottom of the page to create. You will be using almost the same ingredients but changing the ratio. It will make all the difference! You can follow along here: <https://youtu.be/b5Loy4PVyM0>

Step 2: Share Your Creations

- Share with your family. See if they can guess the ratio of chocolate to cream or milk.

Step 3: Time To Reflect

- What did you like about this activity?
- How did playing with chocolate help you understand ratios?
- What other treats could you make in the kitchen by changing ratios?

EXTENSION

Try out another one of these activities from our friends at [Bedtime Math](#):

<http://bedtimemath.org/cabin-fever-math>

Create	Melt	Stir In	Directions	Ratio
Hot Chocolate	1 oz. chocolate chips	3 oz. milk	Mix until blended and drink	1:3
Ice Cream Sauce	2 oz. chocolate chips	2 oz. milk	Mix until it is smooth	1:1
Frosting	4 oz. chocolate chips	2 oz. cream	Mix and spread on toast, cake or fruit	2:1
Chocolate Truffles	3 oz. chocolate chips	1 oz. cream	Mix until smooth and chill in refrigerator for 30 minutes. Form into balls and roll in toppings.	3:1

WHIP IT: MAKE YOUR OWN BUTTER

You will cause a chemical change in cream to create butter!

Before you begin, place the cream on a counter for a few hours. It needs to be at room temperature. When we prepare food, it often changes its texture or form. For example, we get milk from a cow and it is a liquid. But it can become butter, yogurt, cheese, whipped cream, or even skim milk. All of those come from the same main ingredient—but what it becomes is different based on what we do to it.

THE CHALLENGE

Step 1: Getting Started

- Watch this video on making butter: youtu.be/QBaD8HnQFVk. There were a lot of science words in this video. Which of these did you hear: globules, emulsion, membranes, colloid?
- Write down one of those science words. What does it have to do with making butter.

Step 2: Shake It Up

- Let's get started! Pour your cream into the jar and seal tightly.
- Begin to shake your jar. You might want a partner because your arms will get tired. It can take a long time—especially if your cream is still cold!
- After about 5 minutes, take off the lid to see if you have butter yet. It may take up to 20 minutes of shaking.
- Spread some butter onto your cracker or piece of bread to taste it.
- Think about the video. Do you remember why you let the milk get warm?

Step 3: Time To Reflect

- What did you like about this activity?
- This was hard work. What was your strategy to keep going?
- How might science help you be a better cook?

SUPPLIES

- **1 Small glass jar that seals**
- **1 cup heavy whipping cream (room temperature)**
- **A cracker or a piece of bread**



Photo Credits:

1. <https://www.piqsels.com/en/public-domain-photo-sidet>

EXTENSIONS

- Making Slime: myfuture.net/programs/DIY-STEM/Investigate/Slime-Challenge OR take a look at Slime in Outer Space: nickcommunity.com/sis

PLAN YOUR OWN SCIENCE VIDEO

You will plan a video presentation of a fun science activity!

We've watched lots of science and cooking videos this week. Let's plan our own! You'll be the director and the star, so let's find something you would enjoy.

SUPPLIES

- CHECK LIST
- PEN

THE CHALLENGE

Step 1: Getting Started

- First, think about videos you like. What's the atmosphere or vibe that works for you? Watch some of the videos below and think about what you like or don't like about each one you watch.
- Do you want yours to be...?
 - Silly? youtu.be/M0CnQz0Kc4c
 - Fancy? youtu.be/CrdZS0s3sp8
 - Collaborative? youtu.be/iB5HSxNYpCY
 - Cool? youtu.be/jhhrEVAIC3A
 - Serious? youtu.be/LnaV5DqNMGA

Step 2: Use a Checklist To Make Your Plan

- Work through these ideas one by one. Use the checklist attached and ask a grown up for help if you get stuck or need some advice. What ideas do you have for some activities? You can do your own or you can use one of the activities from this week's sessions or extensions.
- What supplies will you need?
- Do you want a special name for your science show?

Step 3: Time To Reflect

- What excites you about this project?
- What part of this project makes you nervous?
- Who might you ask to help you check your plans?

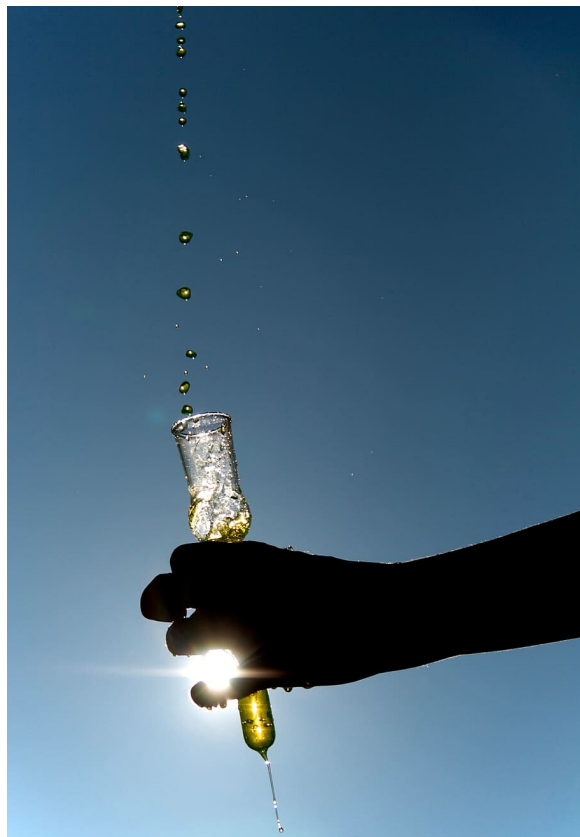


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1. <https://www.piqsels.com/en/public-domain-photo-omzoh>

EXTENSIONS

- Looking for some more ideas for your video? Try playing with sugar water! You can create a rainbow! [stevespanglerscience.com/lab/experiments/sugar-rainbow/](https://www.stevespanglerscience.com/lab/experiments/sugar-rainbow/)

SCIENCE VIDEO PLANNING CHECKLIST



STEP ONE: Watch a few videos to get some ideas

Example Videos	What Did You Like?	What Didn't You Like?
Silly		
Fancy		
Cool		
Serious		



STEP TWO: Decide on an Activity

Activity	Supplies I Need	What I like About This Idea



STEP THREE: Create a Script

- You don't have to write down everything you will say, but you do want to write down the steps so that you won't forget the order you should do things.
- What do you want your audience to learn?
- Make sure that is clear!



MAKE YOUR OWN SCIENCE VIDEO

You spent time planning for your own science show, so now you are ready to go!
You are about to become the director and the star of your very own video!

SUPPLIES

- **Phone or other device for taping**
- **Supplies for your activity**
- **Script and Logo for your video**

THE CHALLENGE

Step 1: Getting Started

- Do you have everything you need? Check for each of the following before you get started taping.
 - Script or plan
 - Supplies
 - The logo to use at the beginning
 - Someone to record your show

Step 2: Start Recording

- It's time to get started! Video tape your activity. Feel free to do it in sections if you need to.
- If you want to try to edit your video, ask for help from your family.

Step 3: Time to Reflect

- What do you like about your video?
- What would you want to do different next time?
- Which did you prefer: planning or being on camera?

EXTENSIONS

- You've been busy this week! Relax with a messy activity: Mentos and Diet Coke! (What variable will you use?) [youtube.com/watch?v=i8A-fvQgR80](https://www.youtube.com/watch?v=i8A-fvQgR80)



Photo Credits:

1. <https://www.piqsels.com/en/public-domain-photo-frziw>
2. Youth Arts Initiative
3. Youth Arts Initiative