Cook the Rainbow
Homeschool Lesson Plan

Overview

Raddish is designed by a dedicated team of teachers and chefs who believe the kitchen classroom is the tastiest place to learn. We love watching learning come alive when kids mix math, stir science, and taste culture!

Paired with the materials found in your Cook the Rainbow box, this lesson plan divides your box into three 45-90 minute lessons. You can use these lessons for students from pre-K – middle school and adapt them to suit your needs. Depending on your timeframe, child's age, and their engagement, these lessons can be taught together or separated.

Please refer to the curriculum provided in your box: recipe guides, activity card, and introduction card.

Happy cooking! Happy learning!

Lesson #1: RAINBOW TACO SALAD
& THE ART OF THE COLOR WHEEL
Activity Time: 45-60 minutes

LEARNING OUTCOMES

- Students will **identify** color terms using art vocabulary.
- Students will **learn** the primary colors.
- Students will **discuss** and practice with creating secondary colors.
- Students will **evaluate** the use of color in fine art painting.
- Students will **create** their own color wheel using either paint, crayons, or water and food coloring.
- Students will **read** and **practice** with the **Featured Culinary Skill - Preparing Mise en Place.**
- Students will **make** and **share** Rainbow Taco Salad.

THE COLOR WHEEL

Teacher Prep:

- Collect Materials:
  - Recipe Guide, tools and ingredients listed.
  - Fine art books or image searches on Google.
  - Supplies for creating a color wheel (dependent on activity)
    - Crayons - Red, orange, yellow, green, blue, purple and red crayons
    - Paints - Tempera paints (Red, yellow, blue), paper/paper plate, brushes
    - Finger paint – Red, yellow, and blue paint, finger paint paper
    - Water and Food dye – 3 clear plastic/glass cups, food dye (red, yellow, blue), pipettes or water dropper, plastic plate.
- Read
  - (Optional)
    - The Rainbow Book by Kate Ohrt- talks about the relationship between colors and the feelings that they might inspire.
- Watch
  - (Optional)
    - The Color Wheel (3:39) https://www.youtube.com/watch?v=eGrGkJtSLsk
    - The Painter's Color Wheel with Clones (1:38) https://www.youtube.com/watch?v=LO30zFqpj-c
    - Art Lessons for Kids: The Color Wheel (6:04) https://www.youtube.com/watch?v=UuXPRFLZvjI
    - Color Mixing with Water (1:00) https://youtu.be/5zTTSbg3L_U

LESSON: Colors Used in Paintings

- Introduction:
  - Show students examples of art done in mostly primary colors. Examples:
    - Piet Mondrian, Broadway Boogie Woogie, 1942-43
    - Jacob Lawrence, Workshop (Builders #1) 1972
    - Pablo Picasso, Claude and Paloma Playing, 1950
    - Henri de Toulouse-Lautrec, Ambassadeurs Aristide Bruant in his cabaret, 1892
    - Mark Rothko, Untitled (Yellow, Red, and Blue), 1953
  - Have students look at one painting at a time.
    - Ask:
      - What do you notice?
      - How does the painting make you feel?
      - What do you think the artist was trying to say?
  - After showing a few paintings, ask:
    - What colors do you see most in these paintings?
      - Red, yellow, and blue

- **Tell** students:
  - Color is a way that we, as humans, describe an object based on the way that it either reflects or emits (sends out) light.
  - The human eye can see different colors because your retina is sensitive to different wavelengths of light.
- **Tell** the students that today they are going to **observe** art focusing on how the artists use color. But before we can really talk about color we need to learn some art vocabulary terms that will help us to have a conversation about what our eyes are seeing.

BACKGROUND INFORMATION: The Color Wheel

- **Read** The Color Wheel section of the Rainbow Taco Salad recipe guide.
- **Discuss** and record the following vocabulary.
  - Primary Colors
  - Secondary Colors
  - Tertiary Colors
  - Complementary Colors
- Ask:
  - Have you ever made your own colors before? If so which ones?
  - What kinds of materials did you use? Can you blend colors with paper? With paint? Why or why not?
  - Can you make your own blue color? Purple? Yellow? Why or why not?
- **Review** the secondary colors:
  - **Ask:** What two colors blend together to make orange?
    - Red and yellow.
      - **Ask:** Where is orange located on the color wheel?
        - Between red and yellow.
      - **Ask:** What two colors blend together to make green? Make purple?
- **Watch** together:
  - The Painter's Color Wheel with Clones (1:38) https://www.youtube.com/watch?v=LO30zFqpj-c
- **Gauge** your students' interest to decide whether they are ready to jump in and discuss tertiary, complementary, warm, cool, and analogous colors as well.

ACTIVITY INSTRUCTIONS: Create Your Own Color Wheel

- **Collect materials** for the activity or activities that you want your students to do. See material list above.
- Using crayons
  - Give students:
    - a paper plate or piece of paper with a circle with an inner and outer ring drawn on it

- a crayon box with at least red, orange, yellow, green, blue, purple and red
- **Tell** students:
  - Draw yellow at the top, red at around 4 O'clock on the circle, and blue at around 8 O'clock.
- **Challenge** them to fill in the secondary colors that fit in between.
  - Optional video: Art Lessons for Kids: The Color Wheel (6:04) https://www.youtube.com/watch?v=UuXPRFLZvjI

- Using paints
  - **Give** students:
    - a paper plate or piece of paper with a circle with an inner and outer ring drawn on it
    - tempera paints (red, yellow, blue), paper/paper plate, brushes
  - **Tell** students:
    - Put a blob of yellow at the top, blob of red at around 4 O'clock on the circle, and blue at around 8 O'clock.
    - Using a brush, drag the yellow and red together towards 2 O'clock. What happens?
    - Repeat with the other colors.
  - **Discuss:**
    - What do you see and feel happening?
    - Where are the primary and secondary colors?
- Finger paint (younger students)
  - **Give** students:
    - a big piece of finger paint paper, optionally cut in a circle.
  - **Instructions:**
    - Paint their left hand yellow and help them to place it at the top of the circle away from them.
    - Paint their right hand red and help them to place it at the right side of the circle.
    - Next have them slide their hands around the edge of the circle until they come together. If they have any paint left on their hands have them rub their hands together and make a print in the secondary (orange) color spot.
    - Use paper towel to wipe off hands in between as necessary.
    - Repeat with more red on the right hand and blue on the left this time.
    - Place the red hand on the right side and the blue hand on the left side and slide them together until they meet around the bottom of the circle.

- Finally repeat with more blue on the left hand and yellow on the right starting with the yellow hand back up at the top and meeting in the empty space left on the circle.

- Discuss:
  - What do you see and feel happening?
  - Where are the primary and secondary colors?

- Using Water and Food Dye
  - **Give** students:
    - 3 cups with some water in them
    - Red, yellow, and blue food dye
    - Pipettes or water droppers
    - A plastic disposable plate (or one you don't mind gets stained)
  - **Tell** students:
    - Put a dropper of yellow at the top, a dropper of red at around 4 O'clock on the circle, and a dropper of blue at around 8 O'clock.
    - Then put another dropper of yellow and one of red together around 2 O' clock. Use the end of the dropper to stir if necessary.
    - **Repeat** with the red and blue at 6 O' clock and blue and yellow at 10 O'clock.
  - Discuss:
    - What do you see and feel happening?
    - Where are the primary and secondary colors?
  - (Optional) **Watch**: Color Mixing with Water (1:00) https://youtu.be/5zTTSbg3L_U

EXTENSION:

- **Check out** a really incredible color wheel lesson plan connected with fine art at:
  - https://www.mensaforkids.org/teach/lesson-plans/introduction-to-color/
- **Read** The Rainbow Book by Kate Ohrt and discuss the relationship between colors and the feelings that they might inspire
- **Visit** an art gallery and go on a scavenger hunt for art that shows:
  - primary colors
  - secondary colors
  - warm colors
  - cool colors
  - complementary colors etc.

COOKING RAINBOW TACO SALAD

Kitchen Prep

- Read the Rainbow Taco Salad recipe card together.
- Identify and gather ingredients.
- Gather tools.
- Read the **Featured Culinary Skill - Preparing Mise en Place**
- Discuss kitchen safety. Specifically, knife safety (Visit Raddishkids.com/pages/safety).

Prepare Rainbow Taco Salad

- Ask children to read or describe each step.
- Together, follow the steps in the recipe.
- Give each child a turn to prepare, cook, and assemble.
- When the Rainbow Taco Salad is ready, eat, taste and share!
- While your friends and family are eating, show them the color wheel that you created and teach them the vocabulary of color blending.

RESOURCES

- Books
  - The Rainbow Book by Kate Ohrt
- Websites
  - https://artclasscurator.com/color-in-art-examples/
  - http://www.teach-nology.com/teachers/lesson_plans/arts/35/colorwheels.html
  - https://www.brighthubeducation.com/lesson-plans-grades-3-5/82527-color-wheel-lesson-plan-for-third-grade-art/
  - http://lessonplanspage.com/artmoodsvocabularyandtheoryofthecolorwheel15.htm/
  - https://www.mensaforkids.org/teach/lesson-plans/introduction-to-color/

- Videos
  - The Color Wheel (3:39) https://www.youtube.com/watch?v=eGrGkJtSLsk
  - The Painter's Color Wheel with Clones (1:38) https://www.youtube.com/watch?v=LO30zFqpj-c
  - Art Lessons for Kids: The Color Wheel (6:04) https://www.youtube.com/watch?v=UuXPRFLZvjI
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Lesson #2: POT-O-GOLD SCRAMBLES
& MYTHS UNCOVERED
Activity Time: 45-90 minutes

LEARNING OUTCOMES

- Students will be able to **define** what a myth is.
- Students will **learn** that there are different types of myths.
- Students will **learn** that myths have a variety of purposes.
- Students will **learn** that myths contain certain characteristics.
- Younger students will **read/listen** to one or more myths and **identify** the type, purpose and characteristics present in it.
- Younger students, optionally, can **act out** a myth.
- Older students will **choose** a type of myth and **write or orally present** a story that contains a purpose and the characteristics associated.
- Older students, optionally, can **write** their myth like a play and **perform** it.
- Students will **read** and **practice** with **Featured Culinary Skill** - Oven Safety
- Students will **make** and **share** Pot o' Gold Scrambles.

MYTHS UNCOVERED

YOUNGER STUDENTS

Notes for the Teacher:

- Ask your local librarian to help you select some myths that are age appropriate for your students.
- Scholastic also has a list: https://www.scholastic.com/teachers/lists/teaching-content/folk-tales-myths-and-legends-grades-prek-5/

Teacher Prep:

- Collect Materials:
  - Recipe Guide, tools and ingredients listed
  - Books of myths. See the list below or check out:
    - https://www.scholastic.com/teachers/lists/teaching-content/folk-tales-myths-and-legends-grades-prek-5/
- Read
  - Optionally, read some of the books listed to become familiar.

LESSON: Myths Uncovered

- Introduction: Stories Told Orally
  - Play a round of broken telephone with your students.
    - Sit in a circle. Start with one word whispered in a neighbour's ear and have that person pass it on and so on until it comes back to the original person who says the word out loud.
  - Ask:
    - Why do you think the word changed? Or why not?
  - Play multiple times:
    - Allow different students to start each round.
    - If it is too easy, have the initiator say a whole sentence instead of a word.
  - Have them reflect on the experience.
    - Do they like playing this game? Why or why not?
    - Have they played before?
    - Is there anything like broken telephone in real life?
  - Tell the students that today they are going to learn about myths. Myths are a kind of story that gets passed from person to person. They are going to learn about different kinds of myths, the reasons why they are created, and what they have in common. They will get the chance to read/listen to some myths.

BACKGROUND INFORMATION: What Are Myths?

- Ask: What do you think a myth is? What makes it different than another kind of story?
  - Myths are a specific kind of story told for a very specific reason.

- Myths are traditional stories, usually lasting for hundreds of years. They are often filled with interesting characters that get up to crazy adventures!
- Myths are an oral tradition, which means that they are stories that were told to others and not written down.

- Draw a connection to the game of broken telephone that they just played.
  - Ask: What do you think happens when complete stories are told from person to person?
    - They change!
    - They get told over and over again.
      - Across distance – from one house or neighbourhood to the next
      - Across time – from grandparent to parent to child and then from that child down to their grandchildren
- Types of Myths
  - Creation myths – describe how the Earth or a group of people came to be
  - Nature myths – describe why something in nature is the way it is
  - Hero myths – describe the quest of a hero or heroine
  - Greek and Roman myths – describe the actions of gods and goddesses
- Purpose of Myths
  - Explain how something came to be
  - To teach a moral lesson
  - To explain a historical event
  - To reveal common hopes and feelings.
- Common Characteristics of Myths
  - Gods and goddesses who interact with humans
  - Gods and goddesses in disguise
  - Reflect the culture that created them
  - Magical or supernatural explanations for events
  - Characters experience a transformation or change

ACTIVITY INSTRUCTIONS: Is this story a myth?

- Read Anansi the Spider by Gerald McDermott or **watch** the read aloud here:
  - (3:45) https://www.youtube.com/watch?v=9kKN4WJU91k
- After reading through once, go back and read it a second time **asking** questions or **modelling** how to spot the type, purpose, and characteristics of the myth.
- **Read aloud** or provide more myth stories for students to read themselves. See teacher notes above for ideas.
- **Encourage** them to **listen or read** the story once and then **investigate** the type, purpose, and characteristics of the story.

EXTENSION:

- Make up your own myth. Remember to think about the type, purpose and characteristics to include.
- Interview family members and friends to see if they have myths to share.

MYTHS UNCOVERED

OLDER STUDENTS

Notes for the Teacher:

- Make sure to read the instructions for the introduction and collect the materials beforehand.
    - Story cubes (https://www.storycubes.com/) or 20-50 slips of paper with simple symbols drawn on.

Teacher Prep:

- Collect Materials:
    - Recipe Guide, tools and ingredients listed
    - Blank paper and writing utensils for each student.
    - Story cubes (https://www.storycubes.com/) or 20-50 slips of paper with simple symbols drawn on. You can have students make these! For example:
        - Question mark
        - Magnifying glass
        - Map
        - Tree
        - Smiley/Sad face
        - Mountain
        - Cat
        - Telephone
        - UFO
    - Myth Note Taking Worksheet (included – see page 24)
    - Materials as needed for myth creation activity

- Read
    - Instructions for introduction: Story Creation
- Watch
    - Reading Lesson: What is a Myth? https://www.youtube.com/watch?v=S1oWioEwKgs

LESSON: Myths Uncovered

- Introduction: Story Creation
    - Collect:
        - story cubes or slips of story idea pictures in an envelope or container
        - blank paper
        - writing utensils
    - **Instruct** each student to place a piece of paper in front of them and **fold** the bottom up to the top to make two even sections.
    - **Give** the first student the 9 dice to **roll** or the story idea pictures to **choose** from.

        - Roll the dice and randomly split them into 3 set of three. Or pick 9 slips and divide those.
        - At the top of your page **draw** the first three symbols.
        - At the top of the bottom half **draw** the next three.
        - **Flip** your paper over and at the top of the other side draw the last three.
    - Put the slips back in the container and **mix up/ pass** the story cubes on to the next student.
    - **Repeat** until everyone has had a turn.
    - **Tell** the students to **mark** the top of their first side Beginning, the next Middle and the flip side end.
    - **Encourage** the students to now to **look at** the symbols in their first section and **write** an engaging opening sentence to hook the reader into their story.
    - **Provide** a short time limit of 2 minutes for the first sentence so that students don't get bogged down into trying to map out their whole story.
    - **Stop** the students at this point and **partner them up.**
    - **Reveal** that what they are going to do now is **swap** papers and write the next sentence in their partner's story.
        - They can **read** the sentence they are working from.
        - They **cannot discuss or make plans.**
        - They should **use the chosen symbols** to give them ideas.
    - A time limit is not necessary for the rest of the activity.
    - After that sentence they will **swap** back and get to **write** the third sentence of the beginning of the story they started with.
    - Next time you swap, move onto the middle of the story. **Remember** to keep the action moving forward and use the symbols to help you.
    - **Continue** going back and forth with 3 sentences per section until you are done.
    - Have the students **read** their stories aloud to the group.
    - **Discuss** what it was like to share the writing process.
        - Did the story end up how they first envisioned it? Or even as they were trying to make it as it went along?
    - **Tell** the students that today they are going to **talk about** myths: what they are, their purpose, and characteristics. Then they will have the opportunity to **create** their own myth.

BACKGROUND INFORMATION: What are myths?

- **Ask:** Can you explain what a myth is?
    - Have them share their definitions and refine, add, or change as they pool their ideas.
- **Share** that myths are a specific kind of story told for a very specific reason.
    - Myths are traditional stories, usually lasting for hundreds of years. They are often filled with interesting characters that get up to crazy adventures!
    - Myths are an oral tradition, which means that they are stories that were told to others not written down in any way.

- **Draw a connection** between myths and the warm up writing activity they just did.
- **Ask:** What do you think happens when complete stories are told from person to person?
    - They change!
    - They get told over and over again.
        - Across distance – from one house or neighbourhood to the next
        - Across time – from grandparent to parent to child and then from that child down to their grandchildren
- **Provide** students with the *Myth Note Taking Worksheet* (included – see page 24) so that they have a structure for taking notes while watching the video.
- **Show** students the video:
    - Reading Lesson: What is a Myth? https://www.youtube.com/watch?v=S1oWioEwKgs
- **Review** the notes that the students took.
- **Work** with the students to come up with a relevant example for each type of myth and then work their purpose and characteristics. For example:
    - Type of Myth
        - Hero Myth – Star Wars
    - Purpose
        - To reveal common hopes – the rebel alliance (underdogs/ good guys) triumphing over the Galactic Empire (powerful/ bad guys).
    - Characteristics
        - Characters experience a transformation or change – Luke discovers that he has the power of the force and goes from being a bratty teenager to being the brave hero of the rebellion!

ACTIVITY INSTRUCTIONS: Write/ Create a Myth

- **Challenge** students to create their own myth. Choose:
    - A type
    - A purpose
    - Characteristics
- **Build** a story based on those foundations.
- Nature myths are often the easiest for students to create so **if they get stuck:**
    - **Choose** a favourite animal.
    - **Ask:** What is something unique about that animal? (elephant trunk, mouse whiskers, etc)
    - **Create** a story to explain why they are the way they are.
- It helps to write it down so that you can share it, however, originally myths were all oral stories so if you can create the whole myth in your mind and share it that way then go for it!
- **Create an environment for storytelling** – Maybe around a fire or a meal of Pot o' Gold Scrambles for the students to orally share their myths!

EXTENSION:

- Read myths and identify their type, purpose, and characteristics.
- Share your myth with a friend and then have them share it with a friend and so on through 5 or so people and then have the last person come back and share it to the first. How has it changed through the telling and words of other people?
- Interview family members and friends to see if they have myths to share.

COOKING Pot ‘o Gold Scrambles

Kitchen Prep

- Read the Pot ‘o Gold Scrambles recipe card together.
- Identify and gather ingredients.
- Gather tools.
- Read the **Featured Culinary Skill - Oven Safety**
- Discuss kitchen safety. Specifically, Oven safety (Visit Raddishkids.com/pages/safety).

Prepare Pot ‘o Gold Scrambles

- Ask children to read or describe each step.
- Together, follow the steps in the recipe.
- Give each child a turn to crack, whisk, and fill.
- When the Pot ‘o Gold Scrambles are ready, eat, taste and share!
- While your friends and family are eating, younger students can initiate a game of broken telephone and then explain how it is like myths. Older students can tell their myths.

RESOURCES

- Books
  - How the Crayons Saved the Rainbow by Monica Sweeny
  - Anansi the Spider by Gerald McDermott
  - Why Mosquitoes Buzz in People’s Ears by Diane Dillon
  - Harry Potter and the Sorcer’s Stone by J.K. Rowling
  - The Lion, the Witch, and the Wardrobe by C.S Lewis
- Websites
  - https://www.quora.com/What-is-the-difference-between-Mythology-and-History
  - https://www.brighthubeducation.com/lesson-plans-grades-1-2/114385-what-are-myths/
  - https://www.storycubes.com/
  - https://www.scholastic.com/teachers/lists/teaching-content/folk-tales-myths-and-legends-grades-prek-5/
- Videos
  - Anansi the Spider by Gerald McDermott or **watch** the read aloud here:
    - (3:45) https://www.youtube.com/watch?v=9kKN4WJU91k

Lesson #3: TECHNICOLOR TARTS
& RAINBOW SCIENCE
Activity Time: 60 minutes

LEARNING OUTCOMES

- Students will **learn and discuss** what conditions are necessary for a rainbow to form.
- Students will **discover** that the light from the sun is made up of a mixture of many different colors of light, even though to the eye the light looks almost white.
- Younger students will **apply** their science learning to **create** a work of art that **demonstrates** how rainbows form.
- Older students will **learn** that light travels in a straight line until it strikes an object.
- Older students will **learn** and use the terms refraction and reflection.
- Older students will **create** an **experiment** or activity to **teach** refraction, reflection, and the formation of rainbows.
- Students will **read** and **practice** with **Featured Culinary Skill** - Using a Hand Mixer.
- Students will **make** and **share** Technicolor Tarts.

YOUNGER STUDENTS

Rainbow Science

Notes for the Teacher:

- This lesson's activity is a nod to something called *Process Art*
  - Process art is all about the experience children have while they're creating. If it has a nice end product—that's great, but the end product isn't the focus of process art.
  - Children learn through play and open-ended activities. Some of the learning that can take place via process art activities includes:
    - Fine motor skills
    - Sensory exploration
    - Science
    - Math
    - Literacy
    - Art history and techniques
    - Creativity and self-expression
- To learn more about process art, check out these articles:
  - https://fun-a-day.com/process-art-for-kids/
  - https://teachpreschool.org/2019/02/05/what-you-might-not-know-about-process-art/

Teacher Prep:

- Collect Materials:
  - Recipe Guide, tools, and ingredients listed
  - Chart paper or white board
  - Art materials that you are comfortable with your students using independently. (See the list of suggestions in the Activity section below.)

- Read
  - *What is a Rainbow?* (included – see page 25)

- Watch
  - How a Rainbow is Formed (3:32) https://www.youtube.com/watch?v=nCPPLhPTAIk

LESSON: Rainbow Science

- Introduction: Imagine a Rainbow
  - Have students close their eyes and imagine a rainbow. Ask:
    - Where is your rainbow?
    - What does the air feel like around you?
    - Where are you standing to see the rainbow?
    - What time of day is it?

        - What colors do you see?
        - What shape is the rainbow?
    - Have the students sit quietly for a moment (gauge depending on your students) and **concentrate** on the picture in their heads.
    - Have students **describe** their rainbow to a partner. Then switch and **listen** to the other person.
    - Have the students **share** what their rainbows had in common.
        - Allow students to call out "My rainbow had that too!" or "It was daytime in my imagination as well."
    - **Record** the ideas that the students share in a way that all students can see (chart paper, white board, etc.)
    - **Summarize** that they all know these things about rainbows, but do they know how or why rainbows form?
    - **Provide** a safe space for the students to share their ideas and then let them know that today they are going to learn more about the science behind rainbows.

BACKGROUND INFORMATION: The Science Behind Rainbows

- **Share** the science behind rainbows:
    - A rainbow in caused by sunlight shining on raindrops. To see a rainbow, you must have the sun behind you and rain falling in front of you. Sunlight looks white, but it is actually made up of many colors. When sunlight enters a raindrop, it divides into various colors. Many rays of sunlight, breaking up into their colors in raindrops, reflect the light like a mirror and make a curved rainbow.
    -
- **Ask**:
    - What things need to be around for a rainbow to form?
        - sunlight
        - raindrops
    - How do those things work together to make a rainbow?
- To help **reinforce the understanding** and add some more information **show** your students:
    - How a Rainbow is Formed (3:32)
      https://www.youtube.com/watch?v=nCPPLhPTAIk
- Repeat the same questions from above and see if they picked up any further information.
    - For example, rainbows can also form in misty conditions and in a drop of dew!

ACTIVITY INSTRUCTIONS: Create your Mind Rainbow Scientifically

- **Remind** the students of the rainbow that they imagined at the beginning of the lesson.
- Tell them that they will have the opportunity to **make** that "mind picture" come to life using materials that they can **choose** from what you make available.
- **Inform** them that they must in some way include the science of how the rainbow was formed.

- **Provide** materials that you are comfortable with your students using. Do not give them so many choices that they are overwhelmed or that you feel would be wasteful. (**Read the Teachers Note about Process Art.**)
    - Examples:
        - Construction paper, scissors, glue, and cotton balls.
        - Paper, tempera paints, brushes and tissue paper.
        - Tin foil, glitter, glue sticks and paper.
        - Shoe boxes, empty containers, cardboard and glue.
- Stand back and provide **support** as needed, including **curious questions** to help them to remember to include the science aspect.
- When the works of art are complete, **host** a Rainbow Gallery Event where students can walk around and **observe** each other's art, **ask questions**, and provide positive **feedback.**

EXTENSION:

- Perform the experiment in:
    - How a Rainbow is Formed (3:32) https://www.youtube.com/watch?v=nCPPLhPTAIk
- What is a moonbow and how is it formed?
- Learn about ROYGBIV – Create your own way to remember the colors. For example, a *pneumonic:* Real Ogres Yawn Gross Breath Inside Vacuums

OLDER STUDENTS

RAINBOW SCIENCE

Notes for the Teacher:

- In this lesson, instead of providing the students with a science experiment or worksheet, they are provided with an opportunity to create their own.
- The process of thinking through how they will test or teach the idea of Rainbow Science will cement their understanding.
    - Think of it like the expression: "Give a person a fish, you feed them for a day. Teach a person to fish, and you feed them for a lifetime."
- With that in mind, support students in the process and do not put all of your focus on the end result of the experiment/activity etc.

Teacher Prep:

- Collect Materials:
    - Recipe Guide, tools and ingredients listed
    - *What is a Rainbow?* (included – see page 25)
    - Materials as needed for student designed experiment/activity
- Watch
    - The Science of Rainbows- It's Okay to be Smart (5:36) https://www.youtube.com/watch?v=5pYnC-ONdXQ
    - How Rainbows Form - Physics Girl (3:54) https://www.youtube.com/watch?v=xkDhQGXqwCM
    - Rainbows and Refraction (1:02) https://www.youtube.com/watch?v=q73VNpFA-0Q

LESSON: Rainbow Science

- Introduction: Rainbow Science in your Own Words
    - **Read** the "Rainbow Science" section of the Technicolor Tarts recipe guide.
    - **Discuss** with students what conditions need to be met for a rainbow to form.
    - **Ask** the **Food for Thought** question and have students **share** their answers.
        - How do these answers tie in with the idea that no two people see a rainbow in the same way?
    - **Challenge** students to **explain** to a partner how rainbows form.
    - **Tell** students that today they will **dive deeper** into Rainbow Science. They will have the opportunity to be a scientist/teacher and **create** an experiment or learning activity to **help** others understand the science behind rainbows!

BACKGROUND INFORMATION: The Science Behind Rainbows

- **Share** with the students that they will have the task of reading the included information sheet *What is a Rainbow?* (see page 25)
- **Show** students one or more of the following videos:

        - The Science of Rainbows- It's Okay to be Smart (5:36) https://www.youtube.com/watch?v=5pYnC-ONdXQ
        - How Rainbows Form - Physics Girl (3:54) https://www.youtube.com/watch?v=xkDhQGXqwCM
        - Rainbows and Refraction (1:02) https://www.youtube.com/watch?v=q73VNpFA-0Q
    - **Encourage** students to **ask** any questions that they still have regarding how rainbows form.
    - **Provide** them with books or access to the internet to do **research** to get answers to their questions.

ACTIVITY INSTRUCTIONS: Create an Experiment or Activity to Teach Others to Understand Rainbows

- **Challenge** students to become a teacher or scientist.
- **Tell** them that they have the opportunity to be designers of an experience that will help others to understand rainbows.
- **Begin** with no restrictions on how they will teach/share – this will allow them to be as creative as possible.
- **Support** students in the process and do not put all of your focus on the end result of the experiment/activity/etc.
    - **Read the teacher notes above** for more information.
- **Ask:**
    - What will be your introduction/guiding question/hypothesis/hook to get people curious and focused?
    - What materials will you need?
    - How will you support your students in completing your activity/experiment?
    - What do you want the outcome of your lesson to be? How will you measure if you reached your goal?

EXTENSION:

- What is the science of a double rainbow?
- What is a moonbow and how is it formed?
- Learn about ROYGBIV – Create your own way to remember the colors. For example, a *pneumonic:* Real Ogres Yawn Gross Breath Inside Vacuums

COOKING TECHNICOLOR TARTS

Kitchen Prep

- Read the Technicolor Tarts recipe card together.
- Identify and gather ingredients.
- Gather tools.
- Read the **Featured Culinary Skill - Using a Hand Mixer**
- Discuss kitchen safety. Specifically, oven safety (Visit Raddishkids.com/pages/safety).

Prepare Technicolor Tarts

- Ask children to read or describe each step.
- Together, follow the steps in the recipe.
- Give each child a turn to mix, press, and arrange.
- When the Technicolor Tarts are ready, eat, taste and share!
- While your friends and family are eating, younger students can display their art and explain how their imaginary rainbows scientifically formed. Older students can invite their guests to take part in their science experiment or learning activity.

RESOURCES

- Books
  - The Magic School Bus Makes a Rainbow: A Book about Color by Joanna Cole
  - All the Colors of the Rainbow by Allan Fowler
  - Elmer and the Rainbow by David McKee
    - Story Time with Ms. Becky (7:25) https://www.youtube.com/watch?v=md8Q9jVGa3s
  - A Rainbow of my Own by Don Freeman
  - Planting a Rainbow by Lois Eckert

- Websites
  - Create a Rainbow Experiment www.brighthubeducation.com/middle-school-science-lessons/5802-indoor-rainbow-experiment-for-kids/#imgn_0
  - 10 Myths about Rainbows http://science.howstuffworks.com/nature/climate-weather/atmospheric/10-rainbow-myths8.htm
  - full lesson plan https://educators.brainpop.com/lesson-plan/rainbow-lesson-plan-make-rainbow/
  - preschool ideas http://www.123child.com/lessonplans/seasonal/spring/rainbows.php
  - If you can't find a mirror this is a rainbow experiment that can be done without one. https://www.scholastic.com/teachers/articles/teaching-content/group-time-exploring-rainbows-and-light/
  - primary and secondary colors lesson plan https://www.education.com/lesson-plan/color-rainbow/

- Videos
    - The Science of Rainbows- It's Okay to be Smart (5:36) https://www.youtube.com/watch?v=5pYnC-ONdXQ
    - How Rainbows Form - Physics Girl (3:54) https://www.youtube.com/watch?v=xkDhQGXqwCM
    - Rainbows and Refraction (1:02) https://www.youtube.com/watch?v=q73VNpFA-0Q
    - Magic School Bus Ep 33- Makes a Rainbow (20:32) https://www.youtube.com/watch?v=hYI6aOA3GJM
    - How a Rainbow is Formed (3:32) https://www.youtube.com/watch?v=nCPPLhPTAIk

Myth Note Taking Worksheet

What is a myth?

Types of myths
1.
2.
3.
4.

The purpose of myths
1.
2.
3.
4.

Characteristics of myths
1.
2.
3.
4.
5.

Think of a myth that you know well and see if you can categorize it with the information above.

What is a Rainbow?

How a rainbow forms:

Light hits water and is ***refracted,*** or bent. Light that appears white (like light from the sun) is actually made up of several colors! The colors that make up white light are the same colors that make a rainbow. They are red, orange, yellow, green, blue, indigo, and violet (ROYGBIV).

How ***refraction*** *works:*

Refraction *is* when light bends because it passes through a different material (like when it goes from air into glass or water.)

You can see a rainbow when the sun is low in the sky behind you and there is rain off in the distance in front of you. Beams of light from the sun shine towards the rain in the air and when the light goes into the raindrops, it is bent (**refracted**). When the light bends, it breaks into all of its colors (the colors of the rainbow).

How ***reflection*** *works:*

Reflection *is* when light hits an object and bounces back in the opposite direction. A reflection could also mean an image, such as a reflection of yourself in a mirror or a puddle of water.

When the light hits the back of the rain drop, it is ***reflected*** and bounces back in the opposite direction (back towards you). Each color leaves the raindrop at its own angle, different from all the others. The colors of light bounce back to your eyes and form the shape of a rainbow, because of their different angles, and you see a rainbow of all the colors!
The colors of the rainbow always appear in the same order because each color always bends at the same angle. The red angle is reflected into your eye at the top, violet at the bottom, and the others at their specific place in between.

How a rainbow is shaped:

If we could see a rainbow from above the horizon, we would see that it actually forms a perfect circle! The reason it appears to be a half-circle is because the horizon blocks our view when we are on the ground. If you were able to get up above the horizon, you might be able to see a full circular rainbow.

http:www.hometrainingtools.com/a/learn-about-rainbows