



Colorful Cuisine Lesson Plan for Homeschool

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 Colorful Cuisine box, this lesson plan divides your box into 3 45-90 minute lessons you can use and adapt to support your homeschool study, pre-k – middle school. Depending on your timeframe and child's age and engagement, these can be taught together or separated for a longer lesson. Please refer to the curriculum provided in your box: recipe guides, activity card, and introduction card. Happy cooking! Happy learning!

Lesson 1: Berry Blue Muffins and Wild Vs. Cultivated Berries

Activity Time: 60-90 minutes

Learning Outcomes

- Students will discuss what *comparing* and *contrasting* mean.
- Students will learn and use the terms *similar*, *different*, *alike*, and *both*.
- Students will learn about and use Venn Diagrams to help them compare and contrast.
- Students will observe, investigate and describe how objects can be sorted.
- Students will compare and contrast the two kinds of blueberries using a Venn Diagram.
- Students will learn about anthocyanin and why it is of scientific interest.
- Students will learn about cultivated and wild blueberries.
- Students will make and share Berry Blue Muffins with family and friends.

Materials

- Recipe guide, ingredients, and tools listed within.
- Wild and cultivated blueberries to compare (frozen works!)



- Chart Paper and Markers
- Venn Diagram Worksheet (free printable with lines- <http://grivina.com/diagram/free-printable-venn-diagram/>)
- Paper and pencil
- Dictionary, Thesaurus
- Optional Books:
 - Blueberries for Sal by Robert McCloskey
 - More Blueberries by Susan Musgrave
 - Ordinary Mary's Extraordinary Deed by Emily Pearson
 - Blueberries Grow on a Bush by Mari Schuh

Resources

- Blueberries:
 - <http://www.superfoodsrx.com/healthyliving/wild-blueberries-benefits/>
 - <http://www.marksdailyapple.com/on-the-problems-of-cultivated-fruit/>
- Antioxidants:
 - <https://www.drweil.com/vitamins-supplements-herbs/vitamins/orac-scoring-antioxidants/>
 - <http://www.quickanddirtytips.com/health-fitness/trends-fads/what-are-orac-values>
 - <http://www.todaysdietitian.com/newarchives/030314p20.shtml>
 - <http://www.berkeleywellness.com/healthy-eating/food/article/how-antioxidants-work>
- Anthocyanins:
 - www.livescience.com/54901-free-radicals.html
 - <https://en.wikipedia.org/wiki/Anthocyanin>
- Venn Diagram <http://grivina.com/diagram/free-printable-venn-diagram/>

Videos

- Things You Didn't Know About Blueberry (1:14)
https://www.youtube.com/watch?v=tg2U_JHxdCU
- Wild Blueberries- Health Heroes (6:11)
<https://www.youtube.com/watch?v=aLCj1LDdBdGE>
- Wild Blueberry Heritage (5:57)
<https://www.youtube.com/watch?v=r9W7fYXNEwU&list=PLE68B295EC28E1916>
- The Wild Blueberry- A Culinary Star (5:20)
<https://www.youtube.com/watch?v=0za6GNxVPK8>



1. Introduction- Same or Different?

- Bring two things to the class to compare. Choose things that are interesting or familiar to the students, for example, a baseball and a soccer ball.
- Have the students identify the objects and then tell them that today they are going to compare and contrast them.
- **Explain** comparing:
 - When comparing two things you think about all the ways that they are *alike or similar*.
- **Ask:** How are baseballs and soccer balls alike?
 - Write the students answers on a chart paper in the middle under the heading ALIKE.
 - Responses might include round, balls, roll etc. "They *both* are used to play games."
- **Explain** contrasting:
 - When contrasting two things you focus on just the ways the things are *different*.
- **Ask:** How are baseballs and soccer balls different?
 - Write the students responses on the chart paper, with those for baseball on the right under DIFFERENCES and those for soccer ball on the left under DIFFERENCES.
 - Responses might include, bouncy, hard, big etc.
- **Explain** Venn Diagrams
 - Sometimes it helps to see the similarities and differences between things by creating what is called a Venn Diagram.
 - Draw one circle encompassing all the differences about baseballs and all the things that are ALIKE. Then draw one circle encompassing all the differences about soccer balls and all the things that are ALIKE.
 - Explain that where the circles overlap shows the items similarities and where they do not overlap shows the differences.

2. Why So Blue?

- **Ask:** Do you like the color blue? Why or why not? In one minute, name as many things that are blue as you can.



- Read the **Why So Blue?** section of the Berry Blue Muffins recipe guide together with students.
 - Explore what is special about the color blue in nature.
- **Share** about anthocyanin
 - The word Anthocyanins comes from the Greek words for flower and blue. Anthocyanins are a kind of molecule called flavonoids. Anthocyanins don't have a smell but they are flavorful- good for cooking and eating! Anthocyanins are found in all tissues of plants, including leaves, stems, roots, flowers, and fruits.
 - In flowers, the color that is made by having anthocyanins present can attract a wide variety of animal pollinators. In fruits, the red, blue and purple colors help in attracting animals to eat the fruit which then means that the seeds get spread around.
 - Plants produce more anthocyanins when they are under stress, such as, having to fight off pests or endure a harsh cold winter or too much ultraviolet light.
 - Anthocyanins have something called **antioxidant** properties. Antioxidants protect the body from damage caused by harmful molecules called free radicals. Many experts believe that having too many free radicals in your body is a factor in developing blood vessel disease (atherosclerosis), cancer, and other conditions.
 - Eating foods rich in anthocyanins and other antioxidants is part of the body's defense system. In the cells of our body, oxygen is constantly involved in chemical reactions in which electrons (charged atomic particles) are shifted around. For our body to make energy, our cells remove electrons from sugars, fatty acids and amino acids and add them to other molecules, especially oxygen. This creates highly reactive, unstable particles known as free radicals. Antioxidants keep free radicals in check by preventing them from taking electrons and causing damage.
 - "Antioxidants are natural substances whose job it is to clean up free radicals. Just like fiber cleans up waste products in the intestines, antioxidants clean up the free radical waste in cells." (www.livescience.com)



3. Two kinds of Blueberries

- Provide examples of wild and cultivated blueberries, either frozen or fresh.
- Have students **observe** and **taste**.
- **Research** blueberries. Choose the level of research dependent on student age and ability. Have older students take notes and have younger students dictate or draw pictures to capture their learning. See resource list below.

Websites

- Blueberries:
 - <http://www.superfoodsrx.com/healthyliving/wild-blueberries-benefits/>
 - <http://www.marksdailyapple.com/on-the-problems-of-cultivated-fruit/>
- Antioxidants:
 - <https://www.drweil.com/vitamins-supplements-herbs/vitamins/orac-scoring-antioxidants/>
 - <http://www.quickanddirtytips.com/health-fitness/trends-fads/what-are-orac-values>
 - <http://www.todaysdietitian.com/newarchives/030314p20.shtml>
 - <http://www.berkeleywellness.com/healthy-eating/food/article/how-antioxidants-work>
- Anthocyanins:
 - www.livescience.com/54901-free-radicals.html
 - <https://en.wikipedia.org/wiki/Anthocyanin>

Books

- Blueberries for Sal by Robert McCloskey
- More Blueberries by Susan Musgrave
- Ordinary Mary's Extraordinary Deed by Emily Pearson
- Blueberries Grow on a Bush by Mari Schuh

Videos

- Things You Didn't Know About Blueberry (1:14)
https://www.youtube.com/watch?v=tg2U_JHxdCU
- Wild Blueberries- Health Heroes (6:11)
<https://www.youtube.com/watch?v=aLCj1LDdBdGE>
- Wild Blueberry Heritage (5:57)
<https://www.youtube.com/watch?v=r9W7fYXNEwU&list=PLE68B295EC28E1916>



- The Wild Blueberry- A Culinary Star (5:20)
<https://www.youtube.com/watch?v=0za6GNxVPK8>

4. Is one better than the other? Wild vs. Cultivated Blueberries

- **Share:** In science, similarities and differences are used to sort and classify objects. Taking good observations and noting these key characteristics helps people make sense of the natural world.
- For older students: **Create** a Venn Diagram using what you learned about wild and cultivated blueberries
 - Free printable Venn Diagram: <http://grivina.com/diagram/free-printable-venn-diagram/>
- For younger students: Create a drawing to sort the key characteristics.

Extension Ideas

- Compare the health benefits of blueberries with pomegranates or other foods.
- Find blueberry recipes to try.
- Create a commercial, cooking show, or advertisement teaching about the benefits of blueberries.
- Older students- Write a comparative essay.

5. Kitchen Prep

- Read the Berry Blue Muffins recipe card together.
- Identify and gather ingredients.
- Gather tools.
- Read the **Featured Culinary Skill- Making Muffins.**
- Discuss kitchen safety. Specifically, oven safety (Visit Raddishkids.com/pages/safety).

6. Prepare Berry Blue Muffins

- Ask children to read or describe each step.
- Together, follow the steps in the recipe.
- Give each child a turn to measure, whisk, and sprinkle.
- When the Berry Blue Muffins are ready, eat, taste and share!
- While friends are eating, share with them the benefits of eating blueberries. What makes them blue and what are the similarities and differences between wild and cultivated blueberries.



Lesson 2: Hot Pink Hummus with Pita Chips and Discover the Middle East

Activity Time: 60-90 minutes

Learning Outcomes

- Students will learn the geographical term *region*.
- Students will learn about the identifying characteristics of the Middle East as a region.
- Students will identify the human and physical characteristics of the places they are studying and explain how those features form the unique character of those places.
- Younger students will distinguish between land and water on maps and globes and locate general areas.
- Younger students will construct a map, or a model of their neighborhood, incorporating such structures as police and fire stations, airports, banks, hospitals, supermarkets, harbors, schools, homes, places of worship, and transportation lines.
- Older students will complete a map of the Middle East including physical geography (mountains, rivers, climate) and characteristics of human geography (language, religion, cultural practices).
- Students will make Hot Pink Hummus with Pita Chips to share with their friends and family.

Materials

- Recipe guide and ingredients and tools listed within.
- Atlas/world map/ globe
- Paper and markers or model making materials (cardboard, glue, play dough, etc.)
- Blank Map Middle East Region
(<http://www.proteacher.com/redirect.php?goto=3183>)
- For younger students: Maps of your city or neighborhood
- For older students: What is the Middle East Region
(https://cmes.arizona.edu/sites/cmes.arizona.edu/files/Where%20in%20the%20World%20Is%20the%20Middle%20East_0.pdf)



Resources

- What is and is not the Middle East Region
https://cmes.arizona.edu/sites/cmes.arizona.edu/files/Where%20in%20the%20World%20Is%20the%20Middle%20East_0.pdf
- For older students:
 - Further Middle East Study
<http://www.pbs.org/wgbh/globalconnections/mideast/index.html>
 - Stereotypes, U.S Foreign Policy, Roles of Women, and Natural Resources
<http://www.pbs.org/wgbh/globalconnections/mideast/questions/index.html>
- Blank Middle East Region map
<http://www.proteacher.com/redirect.php?goto=3183>
- Geography of the Middle East Region
<http://teachmiddleeast.lib.uchicago.edu/foundations/geography/essay/essay-01.html>
- Guiding questions for further discussion
<http://teachmiddleeast.lib.uchicago.edu/foundations/geography/examining-stereotypes/stereotype-01.html>
- The regions of the United States
 - http://www.ducksters.com/geography/us_states/us_geographical_regions.php
 - <https://usa.usembassy.de/travel-regions.htm>
- Books about the Middle East Region:
 - Picture Books- <http://blog.leeandlow.com/2014/05/15/book-list-picture-books-about-muslim-or-middle-eastern-characters/>
 - Older Students- <https://theculturetrip.com/middle-east/articles/new-arabic-fiction-15-must-read-books-from-the-middle-east/>

1. Introduction- Mediterranean Meze

- Read the **Mediterranean Meze** section of the Hot Pink Hummus with Pita Chips recipe guide together with students.
 - **Ask:** Have you ever tried any of these foods? Where? Did you like it why or why not?
 - Practice saying the names of the different items included in the platter.



- **Ask:** Have you tried a taster platter of other kinds of foods? What was included? Did it have a special name like Meze? (For example, Tapas or Charcuterie Platter etc.) Did those foods come from a special area or region?
- **Share:** The foods included on the Mediterranean Meze platter come from a *region* called the Middle East. Locate the Middle East on a map/globe.
 - Today we are going to learn what a geographical region is in general and learn about the Middle East Region in particular.

2. What is a Region?

- **Share:** A *region* is any area on Earth with one or more common characteristics. Regions are the basic units of geography.
 - More specifically a region is an area of land that has common features. A region can be defined by natural or artificial features. Language, government, religion, forests, wildlife or climate can all define a region.
 - Regions are subjectively determined areas that we perceive to have certain characteristics in common. This means that a region doesn't necessarily follow the borders of a country or that it is completely contained within a continent or that everyone that lives there speaks the same language. This makes it debatable and sometimes confusing as to what should and shouldn't be included in a given region.
- **Share** about a region in the United States: **New England**
 - It includes the states of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont.
 - New England as a region has a shared history as the country's first cultural and economic center. New England is also known for its blueberries and seafood.

3. The Region of the Middle East

- **For Younger Students:**
 - Decide what level of learning is appropriate. The younger the student is the more immediate the location needs to be to them in order for them to develop a true conceptualization of the idea "*region*".
- **Choose** a region to explore
 - **Explore** the Middle East Region or a US region or your neighborhood region



1. Middle East Region

- Basic Information:

(https://cmes.arizona.edu/sites/cmes.arizona.edu/files/Where%20in%20the%20World%20Is%20the%20Middle%20East_0.pdf)

- Books: <http://blog.leeandlow.com/2014/05/15/book-list-picture-books-about-muslim-or-middle-eastern-characters/>

2. Your immediate U.S. Geographical region

http://www.ducksters.com/geography/us_states/us_geographical_regions.php <https://usa.usembassy.de/travel-regions.htm>

3. Your city or your neighborhood.

• For Older Students:

- Either provide students with the Middle East Region Information (https://cmes.arizona.edu/sites/cmes.arizona.edu/files/Where%20in%20the%20World%20Is%20the%20Middle%20East_0.pdf) or teach them the basic information and then give them access to additional resources for in depth learning.
 - Have students answer the comprehension questions in Student Activity Worksheet #1 in this pdf

4. Show What You Know

- Have students demonstrate their learning of what a *region* is by choosing one or more of the following:
 - **For Younger Students:**
 - Create a drawing, map, or model of the region that they studied. Must include what makes it a region.
 - Make a public service announcement about what's great in their neighborhood, city, state or region. Can include sights of interest like landmarks or of historical importance or art galleries, zoos, parks etc.
 - Make up a song about what is included in their region.
 - **For Older Students:**
 - Complete a map of the Middle East Region including physical geography (mountains, rivers, climate) and characteristics of human geography (language, religion, cultural practices).
 - Give a presentation on what the region of the Middle East includes.



- Compare and contrast the region of the Middle East to the region where they live.
- Draw a picture that demonstrates the diversity and inclusion of differences in the Middle East Region.

Extension Ideas

- Research a recipe and make one of the other small dishes included in the Mediterranean Mezze Platter.
- Go and visit a site that defines the Geographical Region where you live.
http://www.ducksters.com/geography/us_states/us_geographical_regions.php
<https://usa.usembassy.de/travel-regions.htm>
- For Older Students: do further research about timely topics in the Middle East Region and summarize them to teach others.
 - <http://www.pbs.org/wgbh/globalconnections/mideast/questions/index.html>

5. Kitchen Prep

- Read the title page together.
- Identify and gather ingredients and tools.
- Discuss kitchen safety. Read the **Featured Culinary Skill – Food Processor Safety** (Visit Raddishkids.com/pages/safety).

6. Prepare Hot Pink Hummus with Pita Chips

- Ask children to read or describe each step.
- Give each child a turn cutting, squeezing, and using the food processor.
- When the Hot Pink Hummus with Pita Chips is ready, eat, taste and share!
- Share What You Learned:
 - Decorate the area you are eating in with the maps, brochures, or art the students made.
 - Lead a discussion on what is going on in the Middle East.
 - Have students perform their commercial, song or presentation, etc.



Lesson 3: Spring Green Risotto and Rainbow Science

Activity time: 60 minutes

Learning Outcomes

- Students will learn what conditions are necessary for a rainbow to form.
- Students will learn and use the terms *refraction* and *reflection*.
- 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.
- Students will learn that light travels in a straight line until it strikes an object.
- Students will conduct an experiment to understand *refraction*, *reflection* and the formation of rainbows.
- Students will share their rainbow learning in a variety of colorful ways.
- Students will make Spring Green Risotto.

Materials

- Recipe guide and ingredients and tools listed within.
- KWL chart www.readwritethink.org/files/resources/printouts/KWL%20chart.pdf
- "What is a Rainbow" (included)
- For Rainbow Creation Experiment:
 - Rainbow Creation Experiment Instructions (included)
 - A strong flashlight or source of light that produces strong white light
 - A wide vessel made of glass, filled with water
 - A small mirror which fits into the vessel
 - *Alternative rainbow experiment that can be done without a mirror:*
<https://www.scholastic.com/teachers/articles/teaching-content/group-time-exploring-rainbows-and-light/>
 - A room that can be made very dark
- Optional for demonstrating Rainbow learning:
 - Poster Board, markers, etc.
 - Colorful cereal (Fruit Loops)
 - Colorful candy (Skittles)
 - Tissue Paper
 - Water Colors or tempera paints



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

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=hYl6aOA3GJM>

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 on rainbows
 - <https://educators.brainpop.com/lesson-plan/rainbow-lesson-plan-make-rainbow/>
- Preschool ideas
 - <http://www.123child.com/lessonplans/seasonal/spring/rainbows.php>
- Alternative rainbow experiment that can be done without a mirror
 - <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/>
- KWL chart www.readwritethink.org/files/resources/printouts/KWL%20chart.pdf



1. Introduction- What do you know about Rainbows?

- **Ask:** What do you know about rainbows?
- Create a **KWL chart**- a graphical organizer designed to help in learning. The letters KWL are an acronym, for what students, in the course of the lesson, already **k**now, **w**ant to know, and ultimately **l**earn. The chart is divided into three columns titled Know, Want, Learned. You can do this on a chart paper or a student template can be found here www.readwritethink.org/files/resources/printouts/KWL%20chart.pdf
- Sample questions to prompt students:
 - Have you ever seen a rainbow?
 - What was the weather like when you saw a rainbow?
 - What do you think a rainbow is made out of?
 - What are the colors in a rainbow? Etc.
- Record what students currently know about rainbows in the **K** column of the chart.
- Ask students to share what they would like to learn about rainbows. If they need prompting tell them that today they will learn about what rainbows are, how they form, why we see different colors, and under what conditions they are visible. Record their responses in the **W** column of the chart.

2. The Science Behind Rainbows

- **For Younger Students:**
 - **Share:** A rainbow is 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 actually contains 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.
 - If desired, supplement this explanation with reading or watching the following:
 - The Magic School Bus Makes a Rainbow: A Book about Color by Joanna Cole
 - All the Colors of the Rainbow by Allan Fowler
 - Magic School Bus Ep 33- Makes a Rainbow (20:32) <https://www.youtube.com/watch?v=hYl6aOA3GJM>



- **For Older Students:**

- Read "What is a Rainbow" (included) with definitions of *reflection and refraction*.
- If desired, supplement this explanation with watching the following:
 - 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>

3. Rainbow Creation Experiment

- Now is your chance to see refraction and reflection of light in all its colorful glory! Instructions and material list can be found in the Rainbow Creation Experiment (included).
- **Younger Students** will need support or perhaps have the experiment demonstrated for them. Or they can create rainbows using colorful materials such as Fruit Loops, candies or paints.
 - Many ideas can be found here:
<http://www.123child.com/lessonplans/seasonal/spring/rainbows.php>
- **Older Students** can do the experiment independently and prepare to demonstrate it to their friends and family.
- Fill in the **L** section of the KWL chart with what students have learned.

Extension Ideas

- Learn about primary and secondary colors.
- Read about rainbow myths and legends.
- Explore additional questions:
 - What is the science of a double rainbow?
 - What is a moonbow and how is it formed?
- Create your own way to remember the colors (ROYGBIV). For example, **R**ead **O**gres **Y**awn **G**ross **B**reath **I**nside **V**acuum

4. Kitchen Prep

- Read the title page together.
- Identify and gather ingredients and tools.



- Read the **Featured Culinary Skill – Stirring Skills.**
- Decorate the room with rainbow colors or any rainbow art students have made.
- Discuss kitchen safety, especially stove top safety (Visit Raddishkids.com/pages/safety).

5. Prepare Spring Green Risotto

- Ask children to read or describe each step.
- Give each child a turn measuring, mincing and stirring.
- Once the Spring Green Risotto is ready gather your family and friends together to Eat, Taste and Share!
- While everyone is enjoying their Spring Green Risotto you can talk about rainbows, share your KWL chart or demonstrate the Rainbow Creation Experiment.

What is a Rainbow?

A rainbow is a colorful half-circle shape. It is formed when 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.

Here's how **refraction** works to make a rainbow:

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 its colors (the colors of the rainbow).

When the light hits the back of a 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 a half-circle shape, 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.

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 the other half of it from our view when we are on the ground. If you were able to get up above the horizon, the place where the ground and the sky appear to meet in the distance (even though they don't really meet), you might be able to see a full circular rainbow.

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

Reflection- 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.

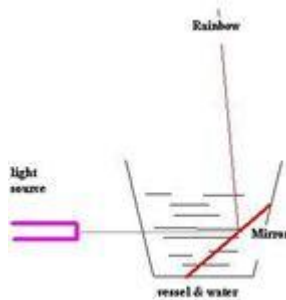
Rainbow Creation Experiment

from brighthubeducation.com

Materials

- A strong flashlight or source of light which produces white light
- A wide-sized vessel made of glass, filled with clear water
- A small mirror which fits into the vessel at the bottom
- A room which has curtains or blinds, so that the room can be turned completely dark (or as dark as possible)

Figure 1: The Set Up



Procedure

- Place the glass vessel filled with water on a table and put the mirror inside it so that the mirror is placed at an angle to the vertical side of the vessel. Take a close look at Figure 1 (above) to understand how the arrangement should look. It is a very simple computer generated diagram and the various parts are labeled on the diagram itself.
- Close all doors and windows, and cover any openings with curtains or whatever you wish so that the room turns as dark as possible. Switch on the flashlight and focus it on the mirror inside the glass vessel. You should see a rainbow appear on the wall or the ceiling depending on the position of your mirror. Try adjusting the angle if it is not appearing.



Results

- The appearance of the rainbow is due to the splitting of the white light from the flashlight into its seven components. These are known by the acronym ROYGBIV, and stand for red, orange, yellow, green, blue, indigo and violet colors respectively.
- Pure white light is a mixture of these colors. When white light is **refracted**, it splits into its components - thus giving the effect of a rainbow. The same thing happens after rain, when the water droplets that are left suspended in the atmosphere act as glass mirrors to refract the light of the sun which are then **reflected** back to our eyes.

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

Reflection- 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.