

Cross Cultural Coffee Curriculum – Chemical and Physical Change

Essential Question: What are examples of chemical and physical changes in my day to day life?

How are those changes enacted in similar or unique ways compared to other countries?

Standards:

3.2.C.A1. Differentiate between physical properties and chemical properties.

3.2.C.A4. Predict how combinations of substances can result in physical and/or chemical changes.

Objectives:

SWBAT accurately follow instructions

SWBAT Measure specific amounts of substances

SWBAT Identify when a physical change occurs

SWBAT identify when a chemical change occurs

SWBAT compare and contrast the ways in which these changes are undergone between cultures in coffee making

Tools/Materials: (enough for each group of students to use)

Coffee Pots

Filters

Ground coffee

Water

Measuring cups

Roasted coffee (unground)

Mortar and pestle

Hot plate

Pot/pan

Cups

Sugar

Procedure

1. Introduce lesson by explaining the importance of chemical and physical changes in preparing foods. Ask students- How do you make a cup of coffee? Collect responses verbally or written.

2. Break students into groups and ask them to make a small amount of coffee the American way (follow the instructions on the ground coffee container). Use the American-coffee pots to do this. If allowed give students a small taste of American coffee with either sugar/cream
 - a. While they enjoy their treat ask them to label in their groups all of the physical and chemical changes that were undergone during the process
 - b. Before moving on check to make sure all groups have the correct responses
3. Show students the Fulbright Hayes Ethiopian Coffee process video
4. Ask students to recreate this process. Ask them to first grind the coffee by hand, then boil the coffee in a pan over a hot plate. (if hot plates are unavailable use the American coffee pots). Encourage the students to experiment on how much coffee should be used.
 - a. Ethiopian coffee is normally brewed much stronger and for much longer than American coffee, this is caused by adding more coffee grounds than Americans would and boiling it for much longer.
 - b. Ask students to list the chemical and physical changes that were undergone during this process and under what circumstances the change occurred.
5. Before leaving ask students to reflect on the advantages and disadvantages of each process.

Attachments:

Fulbright Hayes Coffee Video

Links for further learning: