

Discovering Physical Changes

4th Grade

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References:

- Curriculum guide

Benchmarks:

SLC/GLI #: PS-1

Objectives:

The objective of this lesson is to teach the students what is meant by a physical change, and how to recognize and create their own physical changes in an inquiry type setting, given materials that can be changed physically.

Materials:

- Paper and scissors
- Paper with Markers, colored pencils or crayons
- Hot plate with pan of water to boil – make sure adult supervision is at this station
- Ice
- Cups of water, sugar, and salt, or cool-aid or hot chocolate, etc
- Sandpaper and a piece of wood

Initial Demonstration:

In the effort to try to make this lesson as inquiry as possible, there isn't much of an initial demonstration. Just ask them if they know what a physical change is, give them an example (different from anything at any of your stations), see if they can give you an example. Then write down, or have in a handout what a physical change is: A reversible change that changes a physical property of the material in question, such as a change in color, size, texture, hardness, or state of matter. Then just let the students go at the stations

Target Observations:

- Students should now know what a physical change is.

Procedure:

This lesson is relatively simple. Just set up several stations with random materials that the students can experiment with to create a physical change with them. I chose the following stations, but you can do whatever you want:

Station 1: paper and scissors. Possible physical changes: cut the paper into pieces, tear the paper into pieces, fold the paper up, wad the paper up, etc.

Station 2: paper with markers, colored pencils or crayons. Possible physical changes: color the paper.

Station 3: Hot plate with pan of water to boil. ****Make sure there is adult supervision is at this station**** Physical change – water changing state from a liquid to a gas.

Station 4: Ice. Physical change: make ice melt to change state of water from solid to liquid

Station 5: Cups of water, sugar, and salt – physical changes – dissolve salt and sugar into water.

Have students taste the mixture if you want so they can see that the mixture tastes like the constituents. This station is a little more difficult for students to understand that it's a physical change. After this one, you may want to do a demonstration where you boil off the water and are left with the substance you added.

Station 6: Sandpaper and a piece of wood. Physical change – have the students rub the wood with the sandpaper. It changes the texture of both the wood and the sandpaper.

At each station, have students write down what they did to create a physical change, using the materials given. Also have them write down why it is a physical change. To save time, this question may be done later.

Target Observations:

- Students should notice that there are many ways to make physical changes.
- They should also notice that even when a physical change is made, you are still left with the original materials i.e. the change is reversible.

Target Revised Model:

- Students should understand what a physical change is.
- Students should be able to give the characteristics of a physical change and understand that it's reversible or that the ending materials are the same as the starting materials
- Students should be able to give examples of physical changes.

Summary:

The objective of this lesson was to teach students what a physical change is and how to create such changes in a variety of materials. In order to do this, the students went around to several different stations, and using inquiry were required to create a physical change by using the materials given to them. They then had to describe what they did to make such a change and why this change was a physical change.