Education Closet

lesson seeds

grades 6-8

TEXTURED *fireworks*

SCIENCE AND VISUAL ART

Objectives

CONTENT	FINE ARTS
Middle School Science: MS-PS1-2. Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.	**Art 1:** Understanding and applying media, techniques, and processes.

Materials:

- salt
- white construction paper
- watercolor paint
- water and brushes
- journal and pencil
- Music for Royal Fireworks: Overture, Handel
- MP3/CD player
- Smithsonian article

Pre-assessment:
Discuss experiences students have had with fireworks displays. Include unique displays they have seen, where they viewed the displays, and what questions they have about displays. Sample questions might include: *What makes the colors? How do they create the designs? How do they time everything to the music?*

Engagement:
Read the Smithsonian article 5 Things You Didn't Know about the Science of Fireworks. Ask students to think-pair-share with a neighbor about the article and if it answered any of the questions brought up during the class discussion.

Activity:
1. Discuss the chemical reaction that takes place when the charge is ignited to transfer energy from the main fuel to the colorant chemicals.
2. Give each student a plain piece of black construction paper, 3 colors of watercolor paint, a straw and some salt.
3. Ask students to paint a fireworks design of shapes on their paper.
4. Have students add salt strategically to each firework and to write their observations of the reaction with the paint on a separate piece of paper.

Closing:
Each student can share their fireworks painting. As a class, discuss what observations students made on the chemical reaction of salt and watercolor paint. Ask students to describe the transfer of energy that occurred once the salt was added. Did the color explode or implode?

Assessment:

Create a painted fireworks live display

Have students listen to a selection from Royal Fireworks by Handel. In groups of 3-4, students can sketch out when there should be a painted firework reaction occur to enhance the music. Students should also decide what color and shape would be most appropriate. Then, have students create their artwork "live" to the music using the steps from the activity above. Students will need to understanding the timing of the chemical reaction, as well as interpret how the art will enhance the music.