The Colors of Air Pollution Relay

Kindergarten

Length of Lesson: 45 minutes

Georgia Performance Standards

PEK5.1: Exhibits responsible personal and social behavior that respects self and others in physical activity setting.

a. Follows classroom rules and shows self control.
b. Follows simple directions for basic games and activities.

SKP1: Students will describe objects in terms of materials they are made of and their physical properties.

a. Uses senses to classify common materials, such as buttons or swatches of cloth, according to their physical attributes (color, size, shape, weight, texture, buoyancy, flexibility).

Optional: **MKD1**: Students will pose information questions collect data, organize, and display results using objects, pictures, and picture graphs.

Focus:

Students will investigate air quality by using the Air Quality Index. Students will distinguish between healthy air days and unhealthy air days and how the Air Quality Index gives us important information about the air quality.

Background Information:

The Environmental Protection Agency (EPA) measures pollution in the air. Then they use the Air Quality Index, or AQI, to tell the people about the air. The AQI is an index for reporting daily air quality. It tells how clean or polluted the air is, and what associated health effects might be a concern. The AQI focuses on health effects people may experience within a few hours or days after breathing polluted air. An index can be a quick way to tell people how good or bad something is. The AQI uses **colors**, and **numbers**, and **words** to tell about the air.

Think of the AQI as a yardstick that runs from 0 to 500. The higher the AQI value, the greater the level of air pollution and the greater the health concern. For example, an AQI value of 50 represents good air quality with little potential to affect public health, while an AQI value over 300 represents dangerous air quality.

EPA has assigned a specific color to each AQI category to make it easier for people to quickly understand whether air pollution is reaching unhealthy levels in their communities. For example, the color orange means that conditions are "unhealthy for sensitive groups," while red means that conditions may be "unhealthy for everyone," and so on.

**See the Air Quality Index chart at the end of this lesson.

Materials:

- Vocabulary cards for word wall—healthy, unhealthy, air, pollution, green, yellow, orange, red, purple, good, moderate, and sensitive
- Color copy of the Air Quality Index
- Photograph of city or town with extremely visible air pollution
- Photograph of a city or town with no visible air pollution
- 5 hula hoops
- One classroom set of laminated 1 x 1-inch paper squares in the following colors: green, yellow, orange, red, and purple
- Hula hoop AQI color labels: "good," printed on green paper, "moderate," printed on yellow paper, "unhealthy for sensitive groups," printed on yellow paper, "unhealthy," printed on red paper, and "very unhealthy" printed on purple paper.
- 3 orange cones
- Computer access to check AQI for one week, optional

Procedures:

1. Prior to the students arrival, set out five hula hoops, evenly spaced all in a straight line at the opposite end of the field or other large open area. Randomly place one AQI color label per hula hoop. Arbitrarily scatter the colored squares in the field, making sure to have at least one square per student. On the other end of the field mark place three cones for the students to line up behind.
2. Begin the lesson by asking students the following questions: What is air pollution? Why is clean air important? What does it mean to be healthy? Do you think that people, animals, and plants are affected by air pollution? How can we tell if the air is healthy or unhealthy if we cannot always see the pollution?
3. Show your students a color copy of the Air Quality Index (AQI), explaining that it was created to make it easier for people to quickly understand whether outdoor air pollution

is at a healthy or unhealthy level. Air quality is watched or monitored by the Environmental Protection Agency.

4. Have them share the colors they observe in the chart: green, yellow, orange, red, and purple. What do they think the colors represent?
5. Explain that each color represents how healthy or unhealthy the outdoor air we breath is and whether or not it is safe or not safe to play outdoors. Further discuss the meaning of the vocabulary for each color.
6. Ask students what color(s) would represent the best days to play outdoors? What color(s) might they need to consider staying indoors to protect their health?
7. Show them the photograph of a city or town with extremely visible air pollution. Have the students make a prediction what color the AQI might be for that day. Should they play outside or stay indoors? Why or why not?
8. Show them a second photograph of a city or town with no or not visible air pollution. Have the students make a prediction what color the AQI might be for that day. Should they play outside or stay indoors? Why or why not? You may need to remind that that air pollution is not always visible.
9. Randomly divide students into three groups, explaining that they are going to participate in a relay race.
10. Instruct them that each team is going to line up behind a different orange cone. One person per team will run out into the field to pick up one of the colored squares that have randomly been placed on the ground. They will then place the colored square they have retrieved in the correct hula hoop at the other end of the field. Each hula hoop will have a colored labeled: “good,” “moderate,” “unhealthy for sensitive groups,” “unhealthy,” and “very unhealthy” printed on the correct colored paper.
11. After they have appropriately placed their colored square they will run back to their team and tag the next person in line to do the same thing. They will then go to the back of the line. This will be repeated until each person on the team has taken a turn in retrieving and correctly placing their colored square in a hoop.
12. After the relay race review what each color represents and what it means to their health.
13. Since the hula hoops were not placed in sequential order from “good” to “very unhealthy” have the students

correctly place each hoop and label in the proper order from most healthy to least healthy.

14. Lastly, have the students suggest some ways they can reduce or prevent air pollution. Also, ask them to share what they can do if the AQI is orange, red, or purple. Should they go out for recess? Why or why not?

Extension:

Have them track the AQI and graph the colors during daily calendar time for one week. How many days were green? Yellow? Orange? Red? Purple? What color was represented the most on their graph? What color was represented the least?

Assessment:

Students will be assessed on classroom participation and demonstrating AQI color recognition and its significance to healthy air quality.

Follow-up:

After you have taught this lesson, please tell the Clean Air Schools program about your efforts in a brief, 60-second online survey at http://www.cleanaircampaign.org/Kids-Schools/Lesson-Plans. You can also rate this lesson plan at that link. Your feedback is invaluable in helping this nonprofit education program direct its resources to enhancing these lesson plans and creating new programs and materials for your students. Thanks!

Air Quality	Air Quality Index	Health Advisory
Good	**0 - 50**	Air quality is good. Enjoy activities.
Moderate	**51 - 100**	People who are unusually sensitive to air pollution should consider reducing prolonged or heavy exertion.
Unhealthy for Sensitive Groups	**101 -150**	People with heart or lung disease (including asthma), older adults and children should cut back or reschedule strenuous activities.
Unhealthy	**151 -200**	Everyone, especially people with heart or lung disease (including asthma), older adults and children should cut back or reschedule strenuous activities. Sensitive groups should avoid strenuous activities.
Very Unhealthy	**201 -300**	Everyone, especially people with heart or lung disease (including asthma), older adults and children should significantly cut back on physical activities. Sensitive groups should avoid all physical activities.