Classroom Activities

Kites and Downdrafts board game

Motivational set (anticipatory set)

Video Anticipation Guide

Displaying Data

Discussion Starter

Activity - *Kites and Downdrafts* board game

In small groups have students play the board game to explore environmental impacts and mitigation factors, or choices- link to video

Master #3 - Kites and Downdrafts Board Game

Note: 1 die is required

Activity - Motivational set (anticipatory set)

To get students thinking about air quality, consider:

- have students simulate asthma – breathe through a straw, or have a guest in with breathing difficulties
- brainstorm: do a KWL chart: what do we know, what we want to learn about air quality
- take a tour/field trip to a local air monitoring station

Alberta Program of Studies Outcomes

Students will:

- Investigate and describe relationships between humans and their environments, and identify related issues and scientific questions
- illustrate how life-supporting environments meet the needs of living things for nutrients, energy sources, moisture, suitable habitat, and exchange of gases
- describe examples of interaction and interdependency within an ecosystem (e.g., identify examples of dependency between species, and describe adaptations involved; identify changing relationships between humans and their environments, over time and in different cultures-as, for example, in aboriginal cultures)
- identify examples of human impacts on ecosystems, and investigate and analyze the link between these impacts and the human wants and needs that give rise to them (e.g., identify impacts of the use of plants and animals as sources of food, fibre and other materials; identify potential impacts of waste products on environments)
- analyze personal and public decisions that involve consideration of environmental impacts, and • identify needs for scientific knowledge that can inform those decisions

Activity - Video anticipation guide

In pairs, students answer 10 true or false statements before watching the video, then watch the video, then check their answers

Master #4 - the Video Anticipation Guide

Identify questions arising from practical problems and issues:

- use of various forms of transportation (SUV vs. smart cars vs. public transit vs. bicycling, vs. walking) Predict the change in outdoor air quality if:
  - single occupant vehicles were not allowed on our roadways
  - if families were limited to one vehicle per household
- discuss the number of students in the class who have asthma or another respiratory ailment and possible links to air quality (teacher tip: introduce questions about how much time students spend indoors vs. outdoors) - design and conduct a survey as a first step in investigating this issue - look for other sources of information related to this topic, based on the number of students in your class who have a respiratory ailment, estimate the total number of students in your school who do

Alberta Program of Studies Outcomes

Describe the relationships among knowledge, decisions and actions in maintaining life-supporting environments

- identify intended and unintended consequences of human activities within local and global environments
- describe and interpret examples of scientific investigations that serve to inform environmental decision making
- illustrate, through examples, the limits of scientific and technological knowledge in making decisions about life-supporting environments
- analyze a local environmental issue or problem based on evidence from a variety of sources, and
- identify possible actions and consequences

Skill outcome: Initiating and Planning

Students will: Ask questions about the relationships between and among observable variables, and plan investigations to address those questions

- identify science-related issues
- identify questions to investigate arising from practical problems and issues
- state a prediction and a hypothesis based on background information or an observed pattern of events
- select appropriate methods and tools for collecting data and information

Skill outcome: Performing and Recording

Students will: Conduct investigations into the relationships between and among observations, and gather and record qualitative and quantitative data

- research information relevant to a given problem or issue
- select and integrate information from various print and electronic sources or from several parts of the same source
- use tools and apparatus effectively and accurately for collecting data
- estimate measurements

Activity -Displaying Data

In small groups, find one month of data on ground level ozone concentrations from the Fort Air Partnership web site (www.fortair.org). Display one month of data in a variety of ways (i.e. a spreadsheet, a chart and a graph). Determine which is the best way of displaying the data. Identify the strengths and weaknesses of the ways you've chosen of displaying data.

Master #1 – Student Self Evaluation

Master #2 - Student Group Self Evaluation

Alberta Program of Studies Outcomes
Skill outcome: Analyzing and Interpreting

Students will: Analyze qualitative and quantitative data, and develop and assess possible explanations

- identify strengths and weaknesses of different methods of collecting and displaying data
- compile and display data, by hand or computer, in a variety of formats, including diagrams, flow charts, tables, bar graphs and line graphs

Skill outcome: Communication and Teamwork

Students will: Work collaboratively on problems; and use appropriate language and formats to communicate ideas, procedures and results

- communicate questions, ideas, intentions, plans and results, using lists, notes in point form, sentences, data tables, graphs, drawings, oral language and other means
- evaluate individual and group processes used in planning, problem solving, decision making and completing a task
- defend a given position on an issue, based on their findings *(e.g., make a case for or against on an issue, such as: "Should a natural gas plant be located near a farming community?")*

Activity - Discussion Starter

From the poster, identify five human activities that have an impact on air quality and also identify alternatives that would lessen the impact on air.

Take home and complete a quiz with 15 questions and "always,""sometimes,""never" answers. Then set one family goal to reduce your family's negative impact on air quality. Share your results with your buddy. Family log that the students keep for one month. Each week evaluate on progress toward your goal, discuss it with a parent or guardian, and have them sign it. Each week, teacher collects the completed goal sheet.

Master #5 - Family Quiz and Goal Setting Sheet

Alberta Program of Studies Outcome
Attitude outcome: Stewardship

Demonstrate sensitivity and responsibility in pursuing a balance between the needs of humans and a sustainable environment (e.g., assume personal responsibility for their impact on the environment; predict consequences of proposed personal actions on the environment; consider

both immediate and long-term consequences of group actions; identify, objectively, potential conflicts between responding to human wants and needs and protecting the environment)