

## ▶ 20/20 THE WAY TO CLEAN AIR: CLASSROOM EXTENSIONS

These activities are designed to extend and apply the concepts learned in *20/20 The Way to Clean Air*. The activities range in difficulty, preparation time and concept focus.

### ACTIVITY 1

**Did you know?**  
(Science and Technology, Language)

The 20/20 Planner is filled with interesting facts about energy conservation. Students use their experience, internet research or class notes to create their own “Did you know?” display board in the classroom.

### ACTIVITY 2

**Imagery and Symbolism**  
(Art)

The 20/20 Planner uses clever imagery on the front and back covers. What are the messages in each of these designs? How have the artists used symbolism/imagery to portray their message?

Students should design their own energy poster using symbolism or imagery. What “clever” way can they share their message? An energy saving *poster contest* would be fun and informative!

### ACTIVITY 3

**Exploring the 20/20  
Planner Connector Section**  
(Language, Computer Skills)

Students choose an energy saving activity that they focused on with their family. Using the connector section at the back of the 20/20 Planner, students should research a listed service that takes their energy saving activity to the next level.

**Example:**

In a family that conserved energy by biking together to do errands (in the initial program) instead of driving the car, the student could follow up on this experience by exploring the Walk/Bike Topic section in the 20/20 Connector. The student may use the CAN-BIKE contact information to determine the content of the safety course and when/where it is being offered.

#### ACTIVITY 4

### Linking with the School EcoTeam or Creating an EcoSchools Council (Leadership, Language)

Share the ideas in the 20/20 Planner with the whole school through your school's EcoTeam. If you don't have an EcoTeam and the conditions aren't right to assemble one, consider establishing an EcoSchools Council. Similar to a School Council, the EcoSchools Council would have interested environmental representatives from each classroom. Information and energy saving activities from the 20/20 program can be shared with the representatives. These representatives would then take the program back to their own classrooms for implementation.

The EcoSchools Council could also launch and coordinate other energy saving campaigns around the school. Some possible ideas: Anti-Idling Week, Walk-to-School Week, School Ground Naturalization project, Litterless Lunch campaign, and a Composting Program.

#### ACTIVITY 5

### Making Energy Savings Real (Science and Technology)

Carry out a simple experiment to find out how much energy is needed to make a mug of hot chocolate, and how much energy can be saved by boiling only the amount of water needed for this drink instead of boiling a full kettle. This could be done as a demonstration or by groups of students. You will need an electric kettle, digital watch, hot chocolate and mug.

*Step 1:* Find the label on the kettle stating its power rating (in watts).

*Step 2:* Pour a mug of water into the kettle. Check to see if it covers the element, and if not, add a little more. Plug the kettle in and switch it on, and time how long it takes for the water to boil a single mug of water. Then fill the kettle completely and time how long it takes for it to boil.

*Step 3:* Ask the students to work out how much of a kilowatt hour was needed to boil each amount of water. To calculate kilowatts per hour, multiply the power rating (on the label) by the fraction of an hour taken to boil the water (3,600 seconds in an hour).

*Step 4:* Students calculate how much electricity would be wasted in a year if a full kettle was always boiled when they only needed a mug.

*Step 5:* To help students understand the significance of the energy waste, students could calculate the money saved by boiling only the amount needed. To calculate the money saved, students need to know that one kilowatt hour of electricity costs about 5.5 cents.

*Step 6:* Enjoy the hot chocolate!

*Conclusion/Debrief:* What did we learn from this experiment? How can we use these results to influence our choices and actions in our homes?

## ACTIVITY 6

### Active Transportation News Program (Language, Health, Drama)

Create a news program with segments on the benefits of active transportation to school.

*Step 1:* Students form into news teams. Each team develops a script related to active transportation to school. Topics could include safety tips, health benefits, environmental impacts, safe neighbourhoods, interesting routes and trails in the area, etc.

*Step 2:* News teams develop their script into a newsworthy presentation. This could include visuals, on-the-scene interviews, and location shots.

*Step 3:* Two students are chosen to be anchor people to organize and introduce the different segments.

*Step 4:* Students present their work as an Active Transportation News Show. If possible, videotape the performance.

*Step 5:* Screen the video for the class/school.

This could be used as a tool to launch a walk/cycle to school campaign.

*Conclusion/Debrief:* While screening the video, students evaluate their own performance and assess the development of their dramatic skills. Students discuss the role of media in influencing opinion and action. How can media be used effectively to support the campaign for clean air?

(Adapted from [www.goforgreen.ca/asrts](http://www.goforgreen.ca/asrts))

## ACTIVITY 7

### The Energy Impact of Windows (Science and Technology)

Investigate the impact of windows on the temperature in a house. Students could work in groups for this activity. Each group will need a small corrugated cardboard box (of similar sizes), clear plastic bag, scissors, tape, white paper or paint, desk light with normal bulb, watch, pen and notebook.

*Step 1:* Students will need to make a 'house' with a window. To do this, they will need to seal all gaps in the box and cut a window out of the side. The windows should be different sizes so the class can compare their results.

*Step 2:* Students seal the window with the plastic bag, make the outside of the box white and cut a small

hole in the top of the box to insert the thermometer.

*Step 3:* Students then need to place the model house on a flat surface with the solid back facing the lamp. They should read the thermometer immediately and record the temperature, then wait for five minutes and read and record it again.

*Step 4:* After the house has cooled to room temperature, students should put the house in the shade. Read and record the temperature immediately and then after five minutes.

*Step 5:* Students should repeat step 3, but put the window facing the lamp.

*Step 6:* Students graph their results and discuss the reasons for the differences.

*Conclusion/Debrief:* How can we apply the results of this experiment to better understand energy conservation? Since we can't change the size of the windows in our homes or schools, what other actions can we take to reduce our energy consumption in hot and cold weather? If you were to design an environmentally friendly house, how would you design the size and placement of the windows? Why?

## ACTIVITY 8

### The Great Energy Debate (Science and Technology, Oral Language)

Students describe the advantages and disadvantages of using renewable energy sources as opposed to non-renewable sources.

- Step 1:* Through class work and research, students become familiar with the types of renewable and non-renewable energy sources.
- Step 2:* Students are divided into two or more teams for debate. One team should debate the advantages of renewable energy sources, the other team debates the disadvantages of renewable energy sources. Alternatively, with more than 2 teams, each team could debate the merits of a particular energy source.
- Step 3:* Following the debate, the students write a comparison report summarizing the ideas of both teams and stating their personal opinion.

*Conclusion/Debrief:* Comparison reports can be sent to local newspapers or posted to renewable energy websites.

## ACTIVITY 9

### The Energy Jeopardy Game (Science and Technology)

A fun review activity that challenges the student's understanding of energy conservation and different energy sources.

- Step 1:* Using their notes from the unit and their experience from the 20/20 program, the class members brainstorm 4-6 Jeopardy subject headings (for example, types of renewable energy; energy conservation on the road). This activity can be completed independently or in teams.
- Step 2:* Students are responsible for developing a minimum of ten question/answer combinations to submit to the teacher.
- Step 3:* The teacher organizes the submissions into the Jeopardy game format.
- Step 4:* Student teams challenge each other to become the Jeopardy energy champion!
- Conclusion/Debrief:* Students reflect on their knowledge areas — both their strengths and their areas for further development. This activity and reflection can serve as a review prior to unit tests or quizzes.

## ACTIVITY 10

### Adopt-a-Class (Leadership, Oral Communication)

Students “adopt” a younger class in the school to introduce *20/20 The Way to Clean Air*. This activity will share the 20/20 experience outside their own classroom, as well as serve to solidify important knowledge for the older students.

- Step 1:** Teachers and students decide on a class (or classes) to “adopt” for energy conservation.
- Step 2:** In small groups, students develop a presentation and an interactive exercise to share their knowledge and experience of the 20/20 program.
- Step 3:** They conduct classroom presentations and activities with younger students.
- Step 4:** Presenters arrange a follow-up meeting between the classes to revisit ideas/concepts and touch base on continuing activities.

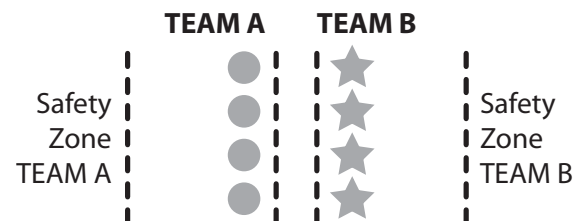
**Conclusion/Debrief:** Students reflect on the following: How do you feel about sharing the “energy conservation message?” How would your presentation be different if the class had adopted an older class? Why is it important to share the energy conservation message? How can you apply this activity outside of school in your everyday life?

## ACTIVITY 11

### Clean Air Trivia Tag

Summarize and reinforce clean air concepts through physical activity.

- Step 1:** Set up playing area in a gymnasium or outdoor field as shown in diagram below.
- Step 2:** Divide the group into two teams. Team A and Team B line up facing each other on their respective lines.
- Step 3:** The leader reads a question to which the answer is either true or false (see questions and answers supplied below). If the answer is true then Team A chases Team B and tries to tag them before they reach their safety zone. If the answer is false then Team B chases Team A and tries to tag them before they reach their safety zone. When someone is tagged by a member of the opposite team, they must join the other team.



*Step 4:* After each question and chase, repeat the question and discuss the correct answer while the teams return to their starting positions. The game ends when all the players are on one team or when the questions have all been asked.

The team with the most people wins. The questions can be adapted to suit specific levels of understanding; however, it is important to have an equal number of true and false answers.

### Sample Questions

1. Using less energy at home will help reduce air pollution. **True**
2. Carbon monoxide smells like burnt matches. **False.**
3. Air quality can be affected by climate change. **True**
4. Riding your bike to school is good for your health. **True**
5. Children are at less risk from air pollution than the average adult. **False.**
6. Ground-level ozone is not a component of smog. **False.**
7. Ground-level ozone protects us from ultraviolet radiation. **False.**
8. People with asthma can be affected by air pollution. **True**
9. Taking public transportation regularly produces more air pollution than taking a car. **False.**
10. Soot and dust are types of particulate matter. **True**
11. Transportation emissions are not important factors in air pollution. **False.**

*Conclusion/Debrief:* Debrief and discussion is generally done between questions. Students could develop their own trivia questions to use in subsequent games.

source: [www.cleanairchampions.ca](http://www.cleanairchampions.ca)