GREEN KIDS PRESENTS...

AWESOME POWERS II

DUEL WITH THE COOL FOOL

Educational Resource Kit 2004




THANKS TO ALL OF OUR GREEN KIDS SUPPORTERS

TABLE OF CONTENTS

About the Show

Green Kids is pleased to present its 2004 play, "Awesome Powers II: Duel with the Cool Fool"! A follow up to 2003's "Awesome Powers", this year's production rejoins Terry Firma in his quest to understand the powers of nature. Whether you saw last year's play or not, you and your students are in for an entertaining and enlightening adventure! In this show Terry searches for his best friend Rex, encountering wacky characters that put his environmental knowledge to the test. You and your students will have the opportunity to learn with Terry and have lots of fun at the same time!

About this Kit

This educational resource kit is for teachers, parents or anyone who works with kids – and for the kids themselves! We hope that you'll have a chance to review the kit with your group before they see the show and that it will enhance their educational experience and enable them to fully enjoy and appreciate the play.

The terms to know and teach (page 7) and the play's themes (page 6) will be particularly helpful to review before seeing the performance.

Exercises in this kit correspond with the Manitoba Curriculum Framework of Outcomes for K-8. Each exercise includes reference codes of specific and general learning outcomes, which are fully defined on page 40.

The kit was also created in keeping with the Common Framework of Science Learning Outcomes Pan-Canadian Protocol for Collaboration on School Curriculum K to 12.

- Exercises for students K-2 focus particularly on developing an Appreciation of Science (including the role of science in their own lives) and Stewardship (including the demonstration of the need for recycling and giving examples of how we can help the environment).

- Exercises for grades 3-5 have an emphasis on Appreciation of Science (including recognizing that scientific theories help explain how and why things happen, planning their actions to take into account or limit possible negative and/or unintended effects, becoming sensitive to the impact they are having on others and/or the environment, looking beyond immediate effect/result of an activity to identify related effects on others and/or the environment) and Stewardship (including demonstrating willingness to change behaviour to protect the environment, realizing that in responding to our wants and needs we can negatively affect the natural environment, recognizing that individual actions are important contributions to larger community issues).

- Exercises for grades 6-8 focus on Appreciation of Science (including recognition of the potential conflicts of differing points of view on specific science-related issues), Scientific inquiry (including striving to assess a problem or situation accurately by careful analysis of evidence gathered, evaluated inferences and conclusions in a critical-minded fashion, basing their arguments on fact, remaining skeptical of a proposal until evidence is offered to support it) and Stewardship (including accepting individual responsibility for impact on the environment, initiating a new behaviour or chance of behaviour in light of an issue related to the protection of the natural environment, identifying potential conflicts between

responding to human wants and needs and the protection of the natural environment, consider others' points of view on a science-related environmental issue, and insisting that issues be discussed using a bias-balanced approach).

This kit contains a variety of resources geared to a range of grade levels. Many of the activities can easily be adapted for other age groups. Feel free to use the activities as you see fit. If you're interested in additional activities for your students, visit www.greenkids.com and look at previous resource kits. Or, check out the websites listed in the back of this kit for additional ideas.

This kit is also available online – in the interest of saving paper (and trees)! So feel free to download it from our website (www.greenkids.com) and print out the sections you think you will use. If you'd prefer to have a copy of this resource kit faxed to you, call us at 1(800)441-6751 (toll-free), send us a fax at 1(204)940-4749 or e-mail us at joel@greenkids.com.

We hope that you'll be able to work some of the activities in this kit into your curriculum. But if not, we encourage you to make the book available to your students, photocopying sections for keen students to take home and work on, or letting kids and their parents know it's available on-line. You may want to have it at the ready for substitute teachers if a lesson plan isn't available.

Tell us what you think!

Please take a few minutes to fill out our teacher evaluation form, found near the end of this kit. The feedback we gain from these forms each year is invaluable, and helps us to move forward in coming years. You'll also find a student evaluation form; we'd love to hear from your students as well!

Following the evaluation forms (and before the answer key), you'll find a booking form for the 2005 Green Kids tour. Be sure to fill one out so your school is guaranteed a visit during our tour next year!

Feel free to contact us at any time if you have any questions or comments about this year's program! You can reach us toll free at 1(800)441-6751, send us a fax at 1(204)940-4749 or e-mail us at thegreenkids_inc @hotmail.com.

We look forward to hearing from you! And now, *on with the show!*

THEMES OF THE PLAY

"Awesome Powers II" offers many environmental messages appropriate for students of all ages. It's a good idea to discuss these key themes with your students before they see the show, to help put it into context. After they've seen the play, a review of these themes will help to reinforce the messages.

Climate change affects us all.
It is clear that climate change is a global problem. For example, melting of the polar ice caps won't just affect the extreme North; the potential exists for the entire planet to experience a dramatic rise in sea levels. Animals, plants and birds will be negatively affected too. More frequent instances of unusual and extreme weather have been recorded around the world, and since these changes affect us all, it's up to all of us to do something about it.

The time to act is now.

Scientists say that climate change has been exacerbated by human activity – particularly over the last hundred years. Since climate change is already happening, and happening very quickly, there's no time to waste. We must all look at the products we use, our activities and our attitudes to see if they're environmentally-friendly. By taking relatively simple steps, each one of us can make a big difference in our planet's future.

Technology can help improve our world, but we must use it responsibly.

Technology has led to amazing achievements and it makes all of our lives easier. But we must always remember that technology can have negative consequences for our environment. We should always ask whether we really need new technologies, and try to balance our own needs with the needs of the environment.

Renewable resources can be used with little environmental impact.

Traditional sources of energy (non-renewable resources like oil, coal and natural gas) have harmed our environment. New work is being done to harness energy from renewable resources (like wind and solar power) that have much less of an environmental impact. Even traditional uses of resources that can be renewed – for example, logging practices – can be updated to be more sustainable and less harmful to biodiversity and wildlife habitat.

Reduce. Reuse. Recycle.

Always remember the three Rs – at home, school, and at play. By reducing the amount we use, reusing items when we can, and recycling them when we can't, we're all producing less waste. Reducing, reusing and recycling is an easy and fun way to make our environment healthier.

TERMS TO KNOW AND TEACH

Before your class sees the play "Awesome Powers II", it's a good idea to familiarize them with the following terms, which come up in the show.

Carbon

Carbon is an element that is found naturally in living things and some of our fuel sources. A certain amount of carbon is part of our atmosphere as carbon dioxide. But burning fuels to produce heat or to run our cars can release too much carbon dioxide and other substances that pollute the air.

Climate Change

Climate change is the overall change in weather patterns around the world, including global warming. Scientists think that the increasing occurrences of extreme and unusual weather are being made worse by human activities, which have led to the release of too many greenhouse gases. This has disrupted the atmosphere's natural balance and Scientists think this imbalance is causing the earth to get too warm in some areas (global warming) and is changing our climate in a number of other ways.

Fossil Fuels

Fossil fuels are non-renewable resources that are used to produce energy. They are found in the earth and were formed many years ago from the remains of plants and animals. Examples of fossil fuels are petroleum, coal and natural gas – which are often used to run our cars and heat our homes and schools.

Geothermal Technology

Geothermal Technology is a source of renewable energy that uses heat from deep inside the Earth to produce electricity and heat.

Global Warming

Global warming is the increase in average global temperatures due to the greenhouse effect. Scientists generally agree that the Earth's surface has warmed by about one degree Fahrenheit in the past 140 years.

Greenhouse Effect and Greenhouse Gases

Greenhouse gases are part of the Earth's natural protective layer, the atmosphere. They help to trap heat from the sun and warm the earth (just like a greenhouse traps heat from the sun to keep plants warm – even in winter). Both natural and human activities produce the gases that contribute to what is known as the Greenhouse effect.

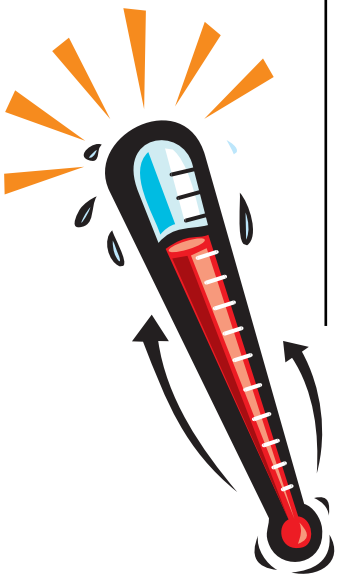
Ice Age

An ice age is a time when large sheets of ice cover the Earth's surface. The most recent ice age occurred during the Pleistocene period, more than 11,000 years ago.

Indicator Species

An indicator species is a plant or animal that reflects the health of the environment through its own health and behaviour.

TERMS TO KNOW AND TEACH



Nuclear Power

Nuclear power is created when atoms split – a process called fission. Through this process they create large amounts of energy, which is released in the form of heat.

Oxygen

Oxygen is a gas that's found in air and water. It is essential to all animal and plant life. Plants give off oxygen and animals (including people) breathe it in.

Ozone Layer

The ozone layer is a layer of gas around the Earth (one of the upper layers of the atmosphere) that protects the planet from the sun's harmful UV rays.

Polar Ice Caps

Polar Ice Caps are the permanent coverings of ice at the North and South Poles.

Renewable Resources

Renewable resources are those sources of energy or products that don't run out when you use them. Renewable resources are either replaced by nature, or by people. When used properly, renewable resources can last forever (resources that can be used up are called non-renewable).

Resources

The materials and forms of energy used to produce consumer goods or energy. For example, trees are resources used to make paper and wood for building houses. Water is a resource used to produce electricity to light our homes.

Solar Power

Solar power is a renewable resource in which heat or light from the sun is used to produce electricity or heat.

Turbines

Turbines are machines that convert energy from a moving liquid (like water) or gas (like air) into power. A windmill is an example of a turbine.

Sources:
www.nei.org
www.dictionary.com
Canadian Oxford Dictionary, 1998
Awesome Powers Educational Resource Kit 2003

TURN YOUR SCHOOL GREEN!

(Extracurricular activities for students of all ages)

Are your students particularly keen about the environment? Review with them the ideas below and plan as a group which ones to take on. As much as possible, have the students decide which activities to do, and who will carry out which tasks.

There are lots of ways to help your school become more environmentally friendly. Here are a few ideas:

Recycle!

Does your school already have recycling boxes? If not, talk to the principal about recycling pop cans and paper.

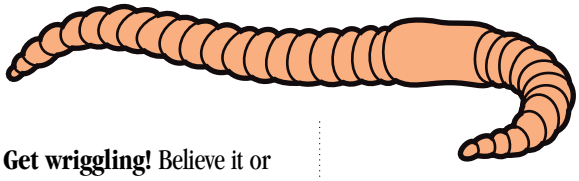
If you do have recycling boxes, are people using them? Take a look in garbage cans, particularly in the lunchroom or cafeteria. (Hint: wear rubber gloves and hold your nose!) Are there pop cans, milk cartons and other recyclables in the garbage can? If there are, make a stink about it! Post signs reminding your schoolmates to use the recycling boxes and telling them what can – and what can't – be recycled.

Compost!

Composting is the process of turning organic garbage (that means garbage that is made out of something that was once alive – like banana peels) into soil. More than half of the garbage we throw out is organic – which means that it could be turned back into soil to help things grow instead of going into a landfill of garbage.

So, how do you compost? There are a few ways:

1) In your back yard or schoolyard, you can use a **compost bin** to hold fallen leaves and grass clippings. You can also add your organic garbage. Give it a stir every now and again with a shovel or rake. As it decomposes it will turn into rich soil that's great for gardening! For more information on composting, visit Resource Conservation Manitoba's website: www.resourceconservation.mb.ca/cap/basics.html. There you can learn all the basics, have your questions answered or contact a composting professional.



2) **Get wriggling!** Believe it or not, worms do a great job of composting! First you have to build a compost bin that they won't escape from. Try using a large plastic box with a lid that fits tightly. Have an adult punch small holes all over the box (not too big!). Fill the bottom of the box with moist leaves or shredded paper. Then add your worms (the kind you need are called red wrigglers and you can get them at your local nursery or bait shop). Add a couple of handfuls of soil. Then start to throw in your garbage. You can use any household organic garbage, **except**: meat, dairy products, bones, fatty foots and hard to digest items like fruit pits. Then close the lid and let the worms go to work! They'll turn the rotting garbage into soil! (For more information on vermicomposting (composting with worms) visit the Resource Conservation Manitoba website at www.resourceconservation.mb.ca/cap/vermi.html)

TURN YOUR SCHOOL GREEN!

Travel green!

How do you, your classmates and teachers get to school? The most environmentally friendly ways are: walking, biking, rollerblading and skateboarding. If you live too far away to get to school on your own two feet, taking the bus or carpooling are great options too.
Have your classroom challenge the rest of the school to travel green for a week. Promote it by putting up posters around the school and by having announcements read over the PA. At the end of the week, the class with the most green travelers could win a special prize.

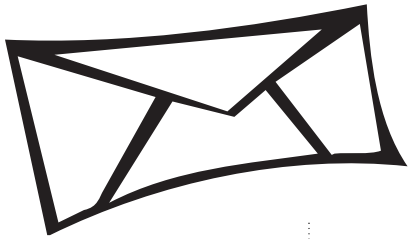
Eat green!

Challenge your classmates to a green lunch! Encourage students at your school to bring lunches that don't use much packaging. (That means using cloth or heavy plastic lunch bags instead of paper bags and packing sandwiches and goodies in reusable plastic containers instead of in tinfoil or plastic baggies.)

Start a club!

Start an environment club at your school! The club could:

- Organize regular garbage clean ups on the schoolyard or in the neighbourhood.
- Encourage all students and teachers to reduce, reuse and recycle.
- Write letters about topics that are of concern. Students could write letters to politicians who are involved in environmental issues or to companies that use too much packaging in their products. They could also write letters to other environmentally-minded students. (Check out the Eco Pals program, www.green-group.com, for information about environmental pen pals.)



- Adopt a charitable organization that does environmental work, by holding a fundraiser and donating the proceeds to the charity. (For more information on Manitoba environmental groups, check out the Manitoba Eco Network's website at www.web.net/men)

Reuse!

Instead of buying new toys, books and games, encourage your friends and classmates to reuse by holding a toy, book or clothing swap or having a school garage sale. Students could also collect unwanted toys, clothing that no longer fits or other household goods and donate them to a charitable organization that can use or sell them.

Sources:
www.ecokidsonline.com
www.green-group.com
www.resourceconservation.mb.ca
www.web.net/men
Green Kids: The Evergrow Enviroshow Teachers Kit, *2001*

A TREE TO ROOT FOR

(Suitable for K-5)

Planting a tree is not only an educational experience for your students, it also helps to improve your schoolyard environment and gives your students a sense of ownership and responsibility.

Specific Learning Outcomes
K-0-4e, K-1-01, K-1-02, K-1-03, 1-0-1a, 1-0-2a, 1-0-4f, 1-1-05, 1-1-07, 1-1-14, 3-0-4a, 3-1-01, 3-1-02, 3-1-03, 3-1-04, 3-1-06, 3-1-10, 3-4-02, 4-0-4a, 4-1-02, 4-1-09.

General Learning Outcomes
B5, C4, D1

Trees are an important part of the environment because they produce the oxygen we all need to breathe; provide homes for animals, birds and insects; give us shade from the sun; and help to keep our air healthy. You can help to make your schoolyard, playground, park or backyard greener by planting a tree!

Here are some important steps to help ensure that your tree will thrive for years:

Select the right kind of tree

• Look at the species of trees that are already growing in your neighbourhood – if they're healthy it probably means they're well-suited to the soil and conditions. You can do this by taking your students on a walking tour around the school. Collect leaves and identify them. Make observations about which trees look the healthiest and where they're planted (i.e., do boulevard trees look as healthy as those with more room to grow?)

• What is most important to your students when choosing a tree? (Providing habitat for birds and animals? Having something pretty to look at?) Decide as a group.

• If you're not sure what type of tree would be best, visit your local nursery or gardening centre and ask for some advice. Or, consult a gardening book and find out which types of trees like which types of soil.

• Make sure the tree you choose is the right size and shape for the space you have available.

Select the spot

• Make sure the spot you select is well away from parking lots, playground equipment, power lines and roads that might be used by maintenance or snow-clearing equipment.

• Your tree might be small now, but make sure it has room to grow. Depending on the species you choose, a mature tree could reach 40 to 100 feet. Remember that the roots take up as much space underground as the branches do above.

P***lanting your tree***

• Before planting, keep the tree cool and shaded and keep its roots damp.

• Planting space for a single tree should measure 10 feet by 10 feet. Soil should be broken up to a depth of 2-3 feet. Mix in enough compost to make a mound about one foot high in the centre, with tapered edges. Dig a planting hole in the centre of the mound, and fill in around the tree with a mixture of soil and compost. Don't pack the hole too tightly. Be sure to soak the soil around the tree with water.

Taking care of your tree

• In the first few years after it's planted, your tree will need to be watered regularly. The watering schedule will depend on the type of tree, soil and climate. Have your students draw up a schedule and take responsibility for watering the tree.

• Trees experience shock after a transplant. For this reason, don't fertilize your tree for two to three years (and use green fertilizer when you do!) as it puts increased stress on the tree.

Enjoy your tree!

• Most important, help your students take ownership of the tree and enjoy it. Have your students name the tree, organize an event to celebrate its arrival (and birthdays!), encourage your students to measure its growth and change and keep records on its progress for future classes.

Sources:
"Schoolyard Trees: Planning and Planting for Survival", Ann Coffey, Green Teacher, *Issue 66, Fall-Winter 2001.*

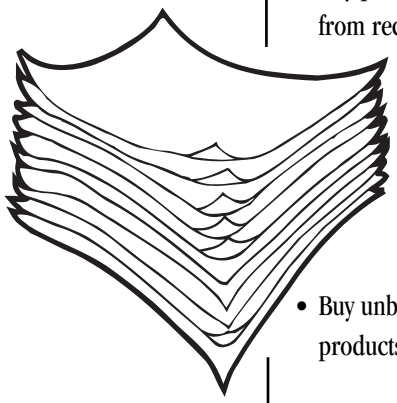
SAVE THOSE TREES, PLEASE!

(Suitable for K-2)

The habits your students form now can lead to life-long appreciation for the environment. Review the tips below with your students and see how many more they can think of. Encourage them to put these ideas into action in the classroom. The fun activity that follows can be posted in your classroom or around the school as a reminder of how to save paper.

There are lots of things that you can do to help reduce our dependence on wood and paper products:

- Buy products with little or no packaging.
- Buy products that are made from recycled paper.



- Buy unbleached paper products.
- Use "tree free" paper, made from hemp or other sustainable products.
- Use cloth napkins, lunch bags and grocery bags instead of paper ones. Use a dishcloth to wipe up spills instead of using paper towels.
- When you're working on the computer, try to print out only your final copy of a project. Do your proofreading and editing right on the screen.
- Use both sides of a sheet of paper. If you make a mistake, cross it out and keep going, don't crumple it up and toss it out.
- Use scrap paper instead of new paper.
- Make sure all the paper, cardboard and other recyclables that you use go into the recycling box – at home, at school, and at the places you play.

Activity: Sign of the times

Saving trees is easy when you get the hang of it! Signs, like stop signs and no parking signs, help us all to remember the rules of the road. Help others remember the rules of the three Rs, by drawing a sign showing people how to reduce, reuse and recycle. Make it bold and colourful! Then post it in your classroom, your kitchen at home, your playground or any place it will get attention!

Specific Learning Outcomes
K-0-7a, K-0-5c, K-3-03, 1-0-4b, 1-0-7e, 1-1-13, 1-1-14, 1-3-11, 2-0-4b, 2-0-7e, 2-2-16

General Learning Outcomes
B5, C6

Source:
Green Kids: The Evergrow Enviroshow Teachers Kit, *2001.*

TEST YOUR ENVIRO-IQ

Source:
Resources to Explore and Sources for this Kit, pages 32 & 33.

Specific Learning Outcomes
K-1-02, 1-1-01, 1-1-07, 1-1-10, 1-4-02, 2-2-12, 2-4-01, 2-4-10

General Learning Outcomes
B1, B2, B5, D2, D4, D5, E4

(Suitable for K-2)

Review the terms to know and teach with your students. Then use this quiz to see how much they remember!

Fill in the blanks in the statements below. When you're all done, find out if you're an **Enviro Genius**!

1) Solar power uses energy from the _____ .

2) Hydro electricity comes from moving _____ .

3) An animal, plant or insect whose health reflects the health of the environment (like Envirosaurus Rex in the play "Awesome Powers II") is called an _____ species.

4) The three Rs are: reduce, _____ , and recycle.

5) _____ change is the change of weather patterns over time.

6) The gases in the atmosphere that help to keep the Earth warm are _____ gases.

7) The _____ layer protects our planet from UV rays from the sun.

8) _____ is the term for the Earth becoming warmer over time.

9) _____ is the process of turning kitchen scraps (and other organic material) into soil.

10) Trees put _____ , which we all breathe, into the air.

Bonus Question

11) We can all help the environment by:
(On the back of this page, write down as many things as you can think of. Give yourself a pat on the back for each one!)

How did you score?

9-10 answers correct =	You're a **green genius**!
7-8 answers correct =	You're an **Earth whiz**!
5-6 answers correct =	You're an **enviro-smartypants**!
3-4 answers correct =	You're on your way to knowing green!
0-2 answers correct =	Time to put on your green thinking cap!

BE A TREE!

(Suitable for K-2)

Through this exercise your students will get to know more about the species of trees that make up our forests.

Review with your students the types of trees found in your neighbourhood. Ask each student to choose a type of tree and complete the following worksheet. Have materials available in the classroom (field guides, nature books) so that students can do their research in the classroom.

1) What type of tree are you?

2) What do you look like?

3) How tall are you?

4) How old will you grow up to be?

5) Where do you live and what kind of climate do you like?

6) What do your leaves look like?

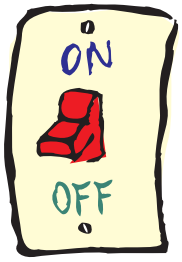
Source:
Resources to Explore and Sources for this Kit, pages 32 & 33.

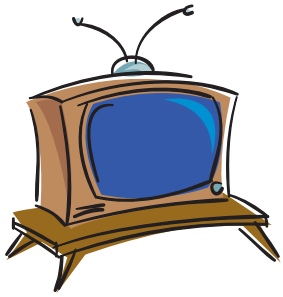
7) What do your seeds look like?

Specific Learning Outcomes
K-1-01, K-1-03, K-1-04, K-1-07, 1-1-05, 1-1-07, 1-3-01, 1-3-02

8) Use the back of this page to draw a picture of yourself.

DRAWING ALTER-NATIVES





Source:
Resources to Explore and Sources for this Kit, pages 32 & 33.

Specific Learning Outcomes
K-0-5c, 1-1-13, 1-1-14, 1-3-11, 2-4-12

General Learning Outcomes
B1, B2, B5

(Suitable for K-2)

This exercise will get your students thinking about environmentally friendly options to everyday activities and products.

Review each of the words below with your students and have them think of an environmentally-friendly alternative. (For example, an alternative to video games would be board games, which require less electrical energy.) Have students draw a picture of their alternative idea, or find a photo in a magazine and paste it opposite each word. Use the back of the page if necessary.

1) Playing video games

2) Getting a ride to school

3) Turning **all** the lights on

4) Buying new toys with a lot of packaging

5) Watching TV

6) Buying all of our groceries and clothes from countries far away

R,R,R

(Suitable for K-2)

Your students are probably familiar with the three Rs – reduce, reuse and recycle – but are they putting them into practice? Reduce and Recycle are fairly straightforward. Reuse takes a little more imagination. Have your students suggest ways they can reuse products at home, at school and at the grocery store. Use the points below to get them started.

Everyone knows the three Rs, right? Terry Firma reminds us that the three Rs are: Reduce, Reuse and Recycle.

Reduce

Reduce is one of the easiest of the three Rs. To reduce what you use ask yourself these questions every time you go to buy something: "Do I really need this?" "Can I get this from another source?" "Is this a product that will last for a long time or can be reused by someone else?"

Reuse

Reusing items gives you a chance to be creative while helping the environment. When you reuse you're preserving energy and raw materials and decreasing pollution. You're also saving money! You can reuse all sorts of things, it just takes a little bit of planning.

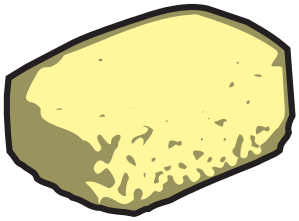
When grocery shopping:

- Bring reusable containers and cloth or heavy plastic shopping bags.
- Choose items that can be reused, like rechargeable batteries.
- Choose products that come in refillable or reusable containers.
- Buy bulk! It uses much less packaging.
- Buy durable products that can be repaired or upgraded if needed.
- Buy refurbished or "previously owned" furniture, appliances, books, sporting goods, etc.

- Shop at second-hand stores, yard sales, flea markets and check the newspaper for great reuse bargains.

At home:

- Use reusable containers for lunches and for storing foods.
- Use cloth napkins, tea towels and sponges instead of paper products.



- Use a reusable coffee filter made from cloth or metal.
- Compost food waste.
- Reupholster or slip cover furniture rather than replacing it.
- Repair clothing or toys instead of buying new ones.
- Donate unwanted furniture, appliances, sporting goods and clothes to charitable organizations.
- Have a yard sale, or give unwanted belongings to family and friends.

R, R, R

- Save reusable items for art projects and hobbies, or donate them to daycare centres.
- Use jars, coffee tins, and plastic containers for storage of small tools or toys.
- Reuse wrapping paper, ribbons, birthday candles and gift boxes.

- Make cloth gift bags from colourful scrap fabric.
- Turn worn-out clothing into rags for wiping or polishing.
- Install a reusable washable filter on the furnace.
- Use cloth diapers or a service instead of disposables.

In the yard:

- Connect the downspout to capture rainwater in a barrel, then use the water for lawns and gardens, washing the car, and other outdoor projects.
- Compost leaves and lawn clippings, or use as mulch.
- Reuse egg cartons, milk and juice cartons to start seedlings.

- Use fireplace ashes to enrich garden soil.

Recycle

Recycling is the most common of the three Rs. Most schools offer recycling programs and most communities have recycling facilities of some kind. Remind your students of the items that can be recycled in your area and encourage them to remind their parents to recycle.

If your students think they know it all about recycling, they might be interested in the following facts:

- Plastic jugs and bottles can be recycled into floor tiles, t-shirts, carpeting and sleeping bags, as well as other plastic containers.
- Juice boxes can be recycled into high-quality paper products.
- Aluminum cans are the most valuable recyclable. If all the aluminum cans used in Canada in a year were recycled, enough energy would be saved to supply electricity to 15,000 homes for a year.

Specific Learning Outcomes
K-3-03, 1-1-13, 1-1-14, 1-3-11, 1-3-10, 2-2-16, 2-4-12, 2-4-13, 2-4-14

General Learning Outcomes
B5

Source for this activity:
http://www.earthday.ca
"Recycling works!", POP (Protecting our Planet) Magazine, *Volume 7, Fall 1999*

SAVE YOUR ENERGY!

(Suitable for K-5)

There are many different ways of conserving electrical energy. Have your class come up with as many ideas as they can. Use each of the following words as a trigger for a class discussion on ways to save energy!

Energy conservation is about using energy wisely – and using no more than we absolutely need. By reducing the amount of electricity we use, we're being environmentally responsible.

Fridge

Don't stand with the fridge door open, looking for something to eat. This makes the fridge work harder to keep food inside cool; as soon as you open the door, room-temperature air rushes in. Decide what you want to eat before opening the fridge door. (Do you experience temporary memory loss on an empty stomach? Consider making a list of all snacks found inside the fridge and taping it onto the fridge door. Then, when your stomach is rumbling, consult your list before opening the door!)

Freezer

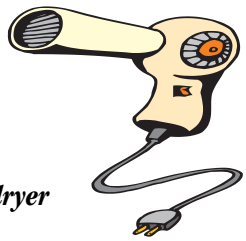
If your parents keep the freezer only half full of food, you can conserve energy by filling some of the empty space with water-filled containers and allowing the water to freeze. The more empty space there is in the freezer, the harder the freezer has to work. When there are several frozen items (water included) close together, they all help to keep each other cold.

Lights

Always remember to turn off the light (or TV, stereo, etc.) when you leave the room. When you're reading or working at your desk, consider using a smaller table or desk lamp instead of the big, overhead light.

Shower

You like your showers hot, right? Of course! But energy is used to heat the water for your shower. Try turning the temperature down a bit, or rinse your hair in cooler water. You'll get just as clean, but you'll be using less energy! You use less water taking a shower than you do taking a bath – so taking shorter showers is a great way to save energy. And you'll be saving water, too!



Hairdryer

Consider waiting about 20 minutes or so before you blow dry, allowing your hair to get semi-dry before you style (you'll need less time with the electric blower).

Dishes

Soak really dirty dishes for a while before you wash them. This will enable you to use less hot water during washing. And don't run the dishwasher unless it's completely full.

Doors

Remember to close the door tightly behind you – even if you're just stepping out for a minute. When you leave doors open, you let out expensive hot air in the winter and precious cool air in the summer. Keeping the doors tightly closed will save energy (electric or gas energy, depending on the type of heating/cooling system you have in your home.)

Source:
"Awesome Powers" Educational Resource Kit, *2003*

Specific Learning Outcomes
1-1-13, 1-3-11, 2-4-12, 2-4-14, 5-0-9E, 5-0-9F

General Learning Outcomes
B1, B5, C1, E4

WHAT HAS THE FOREST DONE FOR YOU LATELY? *LOTS!*

Source:
Green Kids: "Awesome Powers" Educational Resource Kit, *2003*

Specific Learning Outcomes
3-1-05, 3-1-13, 3-1-14, 3-1-15, 3-1-16, 3-1-17, 4-1-02, 4-1-09, 4-1-14, 4-4-12

General Learning Outcomes
B1, B5, D2, E2

(Suitable for grades 3-5)

Forests are vital to the health of the planet. This fill in the blank quiz will help your students understand all the ways that forests contribute to our lives.

Use the words below to fill in blanks in the following sentences and find out more about all the jobs that a forest does. *Words: buildings, erosion, fertilizers, food, furniture, healthy, nature, nutrients, oxygen, paper, photosynthesis, plants, pollution, rice, soil, syrup, wind, water.*

A Forest:

1) *Provides habitat.* A forest provides an environment where plants and animals have everything they need to survive: shelter, _ _ _ _ , _ _ _ _ _ and living space. (Hint: think about the things that you need to survive.)

2) *Produces oxygen.* Through the process of _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ , plants use energy from the _ _ _ to convert carbon dioxide into oxygen that we breathe. A forest helps produce oxygen.

3) *Balances climate change.* A forest stores _ _ _ _ _ _ , helping to keep greenhouse gases in balance. (Hint: it's a kind of gas.)

4) *Prevents soil erosion.* Trees help to prevent soil _ _ _ _ _ _ _ by holding soil in place with their roots. Above the ground, they shelter the soil surface from blowing away in the _ _ _ _ . Trees also help to keep soil moist and healthy.

5) *Keeps other plants and animals healthy.* Decomposing trees bring _ _ _ _ _ _ _ _ _ to the soil, which helps everything that grows and lives in the area. (Hint: your body needs these, too!)

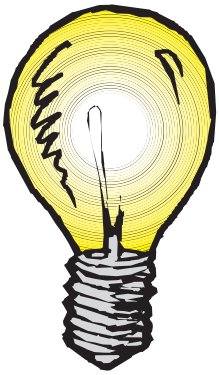
6) *Protects water.* Trees near rivers and lakes help keep water pure and free from _ _ _ _ _ _ _ _ _ by reducing the flow of sediments like _ _ _ _ , and _ _ _ _ _ _ _ _ _ _ _ _ into the water.

7) *Provides a place for exercise and recreation.* Hiking, mountain biking and nature walks are a fun way to experience nature and keep your body _ _ _ _ _ _ _ at the same time! While you're exercising, you're breathing in high levels of _ _ _ _ _ _ provided by the forest.

8) *Generates timber products*. Timber from forests is used to make paper products as well as wood products for constructing _ _ _ _ _ _ _ _ _ and _ _ _ _ _ _ _ _ _ _. (Hint: places we live and work in, and things we use every day.)

9) *Generates non-timber products.* Forests also produce other useful things besides wood and paper, such as maple _ _ _ _ _ , wild _ _ _ _ , edible berries, mushrooms and medicinal _ _ _ _ _ _ .

MAKE THE POWER MATCH!



Source for this activity:
Green Kids: "Awesome Powers" Educational Resource Kit, *2003*

Specific Learning Outcomes
4-2-02, 4-2-03, 5-0-8C, 5-0-8G, 5-0-9E, 5-0-9F

General Learning Outcomes
B1, B2, B5, D4

(Suitable for grades 3-5)

This exercise will introduce your students to types of alternative energy and will help them distinguish renewable energy sources from non-renewable ones.

There are many types of alternative power that are being used currently or explored for future use. Test your own powers by matching the type of energy with the correct definition.

Types of power	*Definitions:*
1) Solar Power	A) This type of power involves turbines, which turn to produce electricity. Because it depends on weather, this type of energy can only be created in certain geographic areas.
2) Wind Power	B) This type of power uses energy that is pumped up from deep beneath the earth's surface to produce electricity.
3) Geothermal Technology (hint: "Geo" means earth and "thermal" means heat)	C) This type of power converts heat and light from the sun into electricity or heat.

Renewable or non-renewable?

Library books aren't the only things that can be renewed. Some energy resources are renewable as well – that means that with proper use they can produce energy forever. Non-renewable resources are gone forever once they've been used. Do you know which are which?

1)	The sun's power will last indefinitely so solar power is:	renewable	non-renewable
2)	Oil is a fossil fuel that was formed over a long time. It is:	renewable	non-renewable
3)	Geothermal technology uses the heat that is always under the earth's surface, making it:	renewable	non-renewable
4)	Wind power is always available (as long as it's blowing!), so it's:	renewable	non-renewable
5)	Coal is a fossil fuel, like oil. So it's:	renewable	non-renewable
6)	Hydropower comes from moving water, so it's:	renewable	non-renewable
7)	Natural gas is a fossil fuel, making it:	renewable	non-renewable

MAKE YOUR OWN GREEN-HOUSE

(Suitable for grades 3-5)

This simple experiment will help your students understand how a greenhouse traps heat from the sun to help plants grow. When you've completed the experiment, draw the parallel between how a greenhouse works and how greenhouse gases keep our planet warm. You might also broaden the discussion to talk about how emissions from human activity are causing greenhouse gases to become unbalanced, which leads to global warming.

How does a greenhouse work and why do plants like them so much? A greenhouse is made of glass, which means that sunlight passes through it. Heat from the sun collects inside the green house – keeping plants warm and cozy, even on cold winter days. (Think about how a parked car can be warm inside on a sunny winter day.)

Don't believe us? See for yourself with the experiment below. Or, visit your local nursery to see (and feel) a greenhouse in action!

What you need:

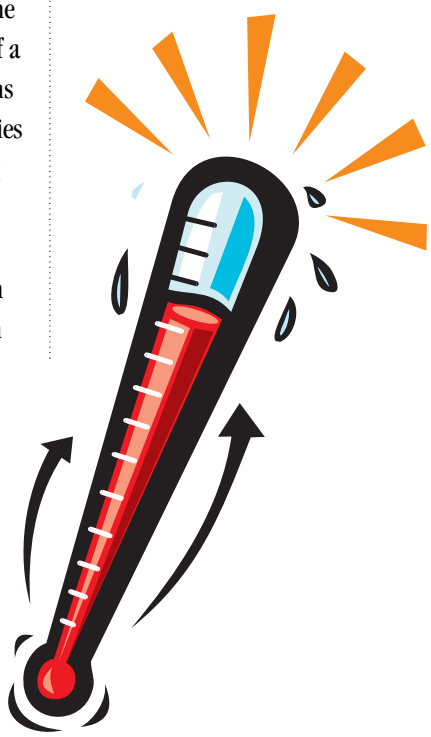
- A thermometer
- Two clear glass jars, one lid

What to do:

1) Place one thermometer in each jar.
2) Cover one with a lid. Leave the other open.
3) Place both in direct sunlight.
4) Record the temperature of each every 30 seconds for 10 minutes. Which one warms up more quickly?

Concept to review:

The earth's atmosphere acts like greenhouse. Protective gases trap heat from the sun that keeps the earth warm, just as the glass of a greenhouse does. But emissions and pollutants from cars, factories and human activity are making changing the composition of those gases and causing the atmosphere to retain too much heat. That means that the earth is warmer than it should be – which leads to climate change.



Specific Learning Outcomes
3-1-04, 4-2-09, 5-4-13, 5-4-18

General Learning Outcomes
B1, B5, D5

Source:
"Changes to the Global Climate", Steven Lott, Teacher's Corner Lesson Plans, *www.evergreen.ca*

DANGER, THIN ICE!

(Suitable for grades 3-5)

Canada's North will face enormous change and challenges with climate change. How much do your students already know about the North?

As Terry learns in "Awesome Powers II", climate change is putting polar bears at great risk. Scientists predict that the arctic region will be the first area to see dramatic climate change. Test your knowledge about the arctic and the sub-arctic with this true or false quiz.

True or false?

1) The polar bear's favourite food is caribou.	*True*	*False*
2) Polar bears can live for up to 25 years.	*True*	*False*
3) Global warming will have no effect on polar bears.	*True*	*False*
4) Climate change could shrink the habitat of wood bison and other sub-arctic mammals.	*True*	*False*
5) Climate change won't cause permafrost to melt.	*True*	*False*
6) Polar bears are the largest carnivore on land.	*True*	*False*
7) Oil drilling and chemicals in the water and air are already affecting polar bears.	*True*	*False*
8) Caribou, seals, walrus, whales and moose are all found in the arctic.	*True*	*False*
9) Nunavut is Canada's newest territory, established in 1999	*.True*	*False*
10) Climate change won't affect the people who live in the North.	*True*	*False*

Specific Learning Outcomes
4-1-02, 4-1-07, 4-1-13, 4-1-14, 5-4-02, 5-4-17, 5-4-18

General Learning Outcomes
B5, D2

Sources:
"Climate Change in Manitoba", www.climatechange.gc.ca
www.tv.cbc.ca/witness/polar/polfacts.html
www.ecokidsonline.com

CLIMATE CHANGE: WHAT'S IT TO ME?

(Suitable for grades 3-8)

Climate change will affect all of us. This quiz should help your students understand that even their lives will be impacted by global warming.

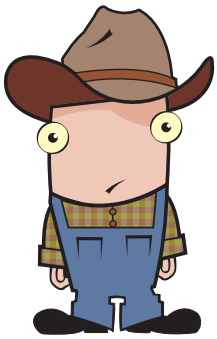
In "Awesome Powers II", we learn that climate change will have a drastic impact not only on the North, but around the world. So what does that mean for us here in Manitoba? Test your smarts and learn some new facts with this multiple choice quiz.

1) Scientists predict that on the Canadian prairies summer temperatures could increase by:
   a) 3 to 4 degrees Celsius
   b) 10 to 15 degrees Celsius
   c) 20 to 30 degrees Celsius
   d) Who cares? Let's go to the beach!

2) Winter temperatures on the prairies are estimated to increase by:
   a) nothing at all
   b) 5 to 8 degrees Celsius
   c) 10 to 15 degrees Celsius
   d) Bring it on, it's too cold here anyway!

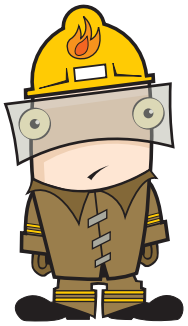
3) Climate change could affect our water quality in Manitoba because:
   a) It will mean lower levels in our lakes and rivers, increasing the level of pollution
   b) It increases the risk of spring flooding, which can cause contaminants in the soil to enter the water
   c) Both of the above
   d) Who needs water? I only drink pop!

4) Climate change could limit our province's production of hydro electric power because:
   a) There will be less rain in summer and greater evaporation
   b) People will stop using electricity to heat their homes
   c) People will use other types of energy
   d) Who cares about hydro electricity? My video games run on batteries!



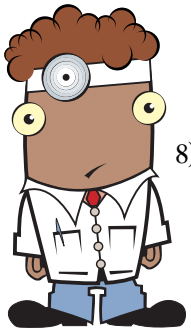
5) Manitoba farmers will be affected by climate change because:
   a) Warmer temperatures mean a longer growing season
   b) Less rain will hurt their crops
   c) Both of the above
   d) What do farmers have to do with me?

CLIMATE CHANGE: WHAT'S IN IT FOR ME?



6) Manitoba forests will be affected because:
   a) Logging will be increased
   b) Dry conditions will damage soil and increase the risk of forest fires
   c) People will start living in forests
   d) Why should I care about forests? It's not like I need them to breathe!

7) Manitoba's wildlife could be affected by climate change because:
   a) People will drive less cautiously
   b) More people will start hunting
   c) They'll lose their natural habitats
   d) Animals? I can see those at the zoo!



8) Climate change in Manitoba could mean an increase in extreme weather, for example:
   a) Tornadoes, hailstorms, heat waves and droughts or floods in the summer
   b) Heavy winter storms
   c) Both of the above
   d) The weather doesn't matter to me, I stay inside all the time.

PS: If you answered d to any of the questions, you need environmental summer school!

Specific Learning Outcomes
3-1-14, 3-1-17, 4-1-07, 4-1-09, 4-1-15, 4-4-15, 5-0-8G, 5-0-9E, 5-0-9F, 5-4-17, 5-4-18, 6-0-8G, 6-0-9E, 6-0-9F, 7-0-9E, 7-1-05, 7-1-06, 8-0-9E, 8-0-9F, 8-4-12

General Learning Outcomes
B5, D2

Source:
"Climate Change in Manitoba", www.climatechange.gc.ca

WATCH OUT!

(Suitable for grades 3-8)

Climate change can is happening in our own backyards. Have your students investigate climate change around your school or in your neighbourhoods. Their findings will contribute to national research!

Climate change is happening right in front of our eyes. Scientists know that climate change is the result of human activity, but what they don't know for sure is exactly what we can expect in the future. One way of studying the impact of climate change is by looking at indicator species – types of animals, plants, birds and insects that are particularly affected by changes in the environment.

Because they live in both land and water and have semi-permeable skin frogs and toads are very sensitive to pollution and vulnerable to environmental changes. So, frogs and toads are used as indicator species and scientists use their populations to check the health of our wetlands.

You can help scientists study indicator species by doing research in your own backyard (or school yard or playground) and submitting your findings.

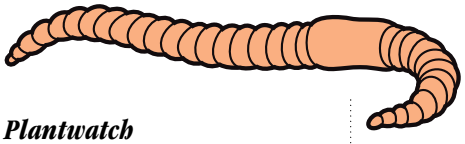
Log on to the Naturewatch website www.naturewatch.ca for more information about how your class can participate in:

Frogwatch

Through Frogwatch, everyday scientists (like your students) can get information about how to identify frogs (by sight and calls) and how to collect information that can be used in scientific research into climate change.

Wormwatch

Through Wormwatch, scientists are studying soil ecology and its role in sustaining agriculture and the natural environment. Wormwatch offers information about sampling methods, types of earthworms, recording results and submitting findings to the researchers.



Plantwatch

Through Plantwatch, scientists can study how plants are responding to climate change. It has been shown that some species are now blooming a month earlier than they did 100 years ago. By participating in Plantwatch, your students can get information about choosing a study site, identifying plants, recording their results and submitting their findings to the research team.

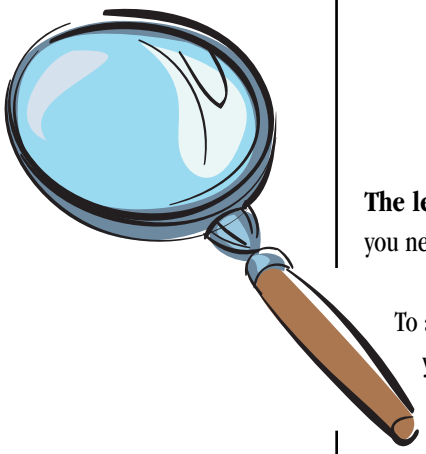
Or, start your own watch program! Choose birds, amphibians, insects, or weather and have your students record their observations over a month. Repeat this exercise with each class every year and save the results. Can students see a change in bird population, flower blooming or weather patterns over 5 years?

Source:
www.naturewatch.ca

Specific Learning Outcomes
3-1-03, 3-4-09, 4-1-02, 4-1-03, 4-1-09, 5-0-8G, 5-0-9E, 5-4-18, 6-0-9E, 6-0-9F, 6-1-04, 6-1-08, 7-0-9E, 7-0-9F, 7-1-05, 7-1-06, 8-0-9E, 8-0-9F

General Learning Outcomes
D2, C6, C8

BE AN ENERGY SLEUTH!



(Suitable for grades 6-8)

The following exercise and tips were developed by Natural Resources Canada as part of its "One-Tonne Challenge" for all Canadians to reduce our greenhouse gas emissions by one tonne. Have your students try this exercise at home or at school. At home they'll need help from their parents. At school they'll need assistance from the school's caretaker.

The less energy we all use, the less stress we put on our environment. Do you use more energy than you need to at home or school? This is your chance to investigate!

To answer these questions, you'll need to help from your parent or school custodian. Remind them that you'll be helping them save energy—and money! Fill out the forms together and go through the tips at the end to find out how you can play a part in reducing greenhouse gases and climate change.

Temperature Control

Question	*Yes*	*No*	*Tip #*
If your home has a furnace, is the filter cleaned regularly?			1
Are there any air leaks around your home's windows and doors?			2
Are your basement, attic and walls insulated?			3
Do you have a programmable thermostat?			4
Are there any ceiling fans in your home?			5
Do you have an air conditioner in your home?			6
Do your parents regularly clean the air-conditioner filter?			7
On hot summer days, do you close your curtains and blinds during the day?			8

Water Use

Question	*Yes*	*No*	*Tip #*
Is your home's hot-water tank insulated?			9
Have your parents insulated the hot-water pipes?			9
Does your shower have a low-flow head?			10
Do you take a shower instead of a bath?			11
Are any of your home's water faucets leaking?			12
Do you let the water run while you brush your teeth?			13
Is laundry washed in cold water?			14

BE AN ENERGY SLEUTH!

Appliances and Lighting

Question	*Yes*	*No*	*Tip #*
Do you leave on lights, sound systems, TVs and computers when they're not in use?			15,16
Are compact fluorescent light bulbs used in your home?			17
Do your parents use the microwave when they cook small amounts of food?			18
Is the refrigerator away from heat sources like a stove or direct sunlight?			19
Is your fridge's door seal checked regularly?			20
Is the clothes dryer's lint screen cleaned after each load?			21
Do your parents hang clothes outside to dry?			22
Do you use your dishwasher's air-dry cycle?			23

Transportation

Question	*Yes*	*No*	*Tip #*
Do you use your bike, walk, or take public transportation whenever possible?			24
Do your parents allow the car to idle when it's parked?			25
Do your parents buy ethanol-blended gasoline?			26
Do your parents check their vehicle's tire pressures regularly?			27
Do your parents have their vehicles serviced regularly?			28
Is the car's block heater plugged into an automatic timer?			29
Does your family car have cruise control?			30

Now, check out these tips to see what you can do to help reduce the energy you and your family use. Note that some of the changes listed below **must** be done by an adult.

Temperature Control

1 Change or clean furnace filters every one to two months.** Dirty air filters block airflow, forcing furnaces to run longer and use more energy.

2 Use caulking and weather stripping to reduce air leaks.** If combined, all the air leaks in an average older house would add up to a 40cm2 hole / big enough for a large dog to pass through! By caulking and weather-stripping, your family can save up to 20 percent on home-heating costs and eliminate cold drafts and costly leaks around windows, doors and baseboards.

3 Upgrade insulation in walls, attics and basements.*** This is best done during renovation projects—when re-modelling a kitchen or bathroom, for example. Insulating basement walls can reduce your energy bill by up to 35 percent.

4 Install programmable thermostats to control both heating and cooling.*** It's easy to forget to turn down the thermostat at night and when we leave for work and school. Programmable thermostats raise and lower temperatures automatically. Remember: for every 1 degree Celsius (2 degrees

BE AN ENERGY SLEUTH!

Fahrenheit) you lower the thermostat, you save 2 percent on your heating bill!

5 Install a ceiling fan.*** Ceiling fans use less electricity than air conditioners or furnaces. When used properly, these fans help reduce the energy we use to heat and cool our homes. In the winter, you can set the ceiling fan's direction of airflow to push warm air toward the floor, where it's cooled and drawn back to the furnace for re-heating. In the summer, change the fan direction to draw air upward, cooling rooms with a constant flow of air.

6 Set your air conditioner at 25°C.** For each degree set below 25°C, you use 3 to 5 percent more energy. This 25°C setting will provide the most comfort for the least cost.

7 Clean the air-conditioner filter every month.** Dirty air filters reduce airflow and may damage air conditioners. Filters that are clean enable units to cool down quickly and use less energy.

8 Keep doors, windows, blinds and drapes closed on hot sunny days; open windows at night.* The warmer your house, the more energy your air conditioner will use to keep it cool. Open windows when the sun goes down, and let the night air cool your house.

Water Use

9 Insulate hot-water tanks and hot-water pipes to reduce heat loss.*** 15 percent of a typical energy bill goes to heating water. Ensure that your hot-water tank and pipes are insulated properly. Check your user's manual or consult with a professional to see if insulating the tank or the pipes is recommended for your home.

10 Install low-flow showerheads.** These heads are easy to install and use up to 60 percent less water.

11 Take a quick shower instead of a bath.* You will use up to 50 percent less hot water. A five-minute shower, for example, uses less than 38 litres of water, compared with 57 to 95 litres for a bath.

12 Repair all leaking faucets.** A leak of only one drop per second wastes about 10,000 litres of water each year—that's enough water for 16 baths each month. Most leaks are easy and inexpensive to fix.

13 Don't run the tap while shaving, brushing teeth or doing dishes.* Partially fill the basin with hot water—you'll save energy and help reduce greenhouse gas emissions.

14 Wash your clothes in cold water.** When you wash clothes in cold rather than hot water, you use 90 percent less energy.

Appliances and Lighting

15 Turn off lights when they are not needed.* If no one's using a room, why keep it lit? Use timers and solar and motion sensors to turn lights on and off automatically.

16 Turn off appliances when they're not being used.* When no one's watching TV, listening to the stereo, or using computer equipment, turn them off. You'll save energy and money—and reduce greenhouse gas emissions.

17 Use compact-fluorescent lighting.** These lights consume up to 75 percent less electricity than incandescent bulbs, produce less waste heat and last up to 10 times longer.

18 Use a microwave instead of your conventional oven.** Microwave cooking consumes much less energy and produces much less waste heat than your stove. Convection ovens use up to 30 percent less energy than standard ovens. Toasters ovens and slow cookers are also more energy efficient than most conventional ovens.

BE AN ENERGY SLEUTH!

19 Keep refrigerators and freezers away from all heat sources.** These include direct sunlight, furnace vents, radiators and appliances such as ovens, cooking ranges and dishwashers.

20 Make sure there are no gaps in your refrigerator's door seal.* Test the door seal by closing it on a sheet of paper. If the sheet slides out easily, replace the seal. Try the flashlight test, as well. Turn on a flashlight, place it in the fridge and close the fridge door. If you can see light around the door, replace the seal.

21 Clean your dryer's lint filter after each load, and clean the dryer duct regularly.** Clogged filters and ducts restrict airflow, reduce energy efficiency and can be a fire hazard.

22 Hang clothes outdoors to dry.* You'll use a lot less energy. If you do use a dryer, don't leave clothes in the machine too long. Over-drying not only consumes more energy, it can also cause clothes to shrink.

23 Let dishes air-dry.* Your dishwasher's drying cycle uses a lot of energy. Select the no-heat drying cycle, or simply turn the dishwasher off and open its door after the rinse cycle is complete.

Transportation

24 Leave your car at home.* Reduce greenhouse gas emissions by using public transit and sharing rides. Walk, cycle and inline skate whenever you can. These activities are good for you and the environment.

25 Don't let your car idle.*** Ten seconds of idling uses as much gasoline as starting your car. When you're stopped for more than 10 seconds (except at traffic lights), switch off the ignition—you'll reduce greenhouse gas emissions and save money. In winter, cold engines really only need 30 seconds to warm up. Anything more wastes gas and produces unnecessary exhaust emissions.

26 Use ethanol-blended gasolines.*** These fuels are better for the environment than regular unleaded gasolines and diesel fuels. Check your owner's manual to see if your vehicle will run on ethanol-blended gasoline, which is available at nearly 1,000 stations across Canada.

27 Check your tire pressures once a month.** Take your measurements when the tires are cold—three hours after use, or after driving a distance of less than 2 km. A vehicle driving on tires that are under-inflated by only 6 psi (pounds per square inch), or 40 kPa (kiloPascals), can use up to 3 percent more fuel. Under-inflated tires are also unsafe.

28 Service your car regularly.*** Have a professional check for poor wheel alignment, uneven tire wear and brake drag that can increase both fuel consumption and greenhouse gas emissions.

29 Use a block heater in winter when the temperature drops below to -20°C.** A block heater warms the oil and engine coolant, makes your vehicle easier to start, and can improve winter fuel economy by as much as 10 percent. Don't leave your block heater on overnight. Use a timer to switch on the block heater one or two hours before you plan to drive.

30 Use your vehicle's cruise control on highways.*** Cruise control enables you to maintain steady speeds, so your vehicle will consume less fuel and produce fewer greenhouse gas emissions—and you'll save money.

Codes:

* This is an activity young people can do to help cut greenhouse gas emissions.

** Young people should ask for help with this activity.

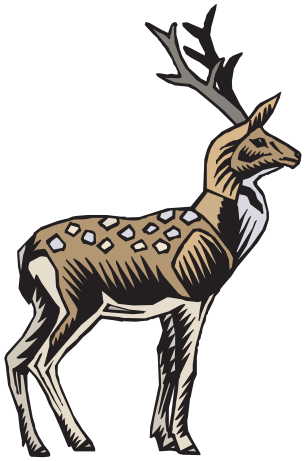
*** Only adults should undertake these greenhouse gas reduction activities.

Source:
Natural Resources Canada, "Be a One Tonne Challenge Energy Sleuth!", www.oee.nrcan.gc.ca

Specific Learning Outcomes
6-0-7H, 6-0-9E, 6-0-9F, 6-3-05, 6-3-18, 6-3-19, 7-0-9E, 7-0-9F, 7-1-06, 8-0-9E, 8-0-9F, 8-4-18

General Learning Outcomes
B5, C4, C8

WHOSE FOREST IS IT?



Source:
Resources to Explore and Sources for this Kit, pages 32 & 33.

Specific Learning Outcomes
6-0-8G, 6-0-9E, 6-0-9F, 7-0-8G, 7-0-9E, 7-0-9F, 7-1-05, 7-1-06, 7-1-07, 8-0-8G, 8-0-9E, 8-0-9F

General Learning Outcomes
B5, C4, C5

(Suitable for grades 6-8)

There are two – or more! – sides to every issue. Issues around the use of technology and environmental impact can be particularly sensitive and complex. This exercise encourages students to consider all points of view before coming to a conclusion on any issue.

This is a role-playing exercise that can be used with groups of virtually any size. You can break a large group up into several smaller groups, or maintain one large group and have students without roles act as a "jury".

Assign a character to each student who will play a role:

The logger

The logger depends on forestry for his/her income and needs this job to feed his/her family. He/she doesn't have training for any other kind of job.

The environmentalist

The environmentalist insists that all logging be stopped. He/she will go to extreme measures, like chaining himself/herself to a tree, to make the point heard and attract media attention to the issue.

The deer

The deer lives in the forest and depends on it for food and shelter. As trees are cut down, the deer is being forced out of its home, and food is more difficult to find. The deer now has to live closer to humans, which puts it in danger.

The mill owner

The mill owner knows that the more trees are cut down, the more money he/she will make.

The tourist

The tourist wants to hike through the forest and enjoy the scenery.

The forestry company spokesperson

The forestry company understands the concerns of the environmentalist, but says that their forestry practices are sustainable. They plant trees as they log, so the forest will regrow in 50 years.

The politician

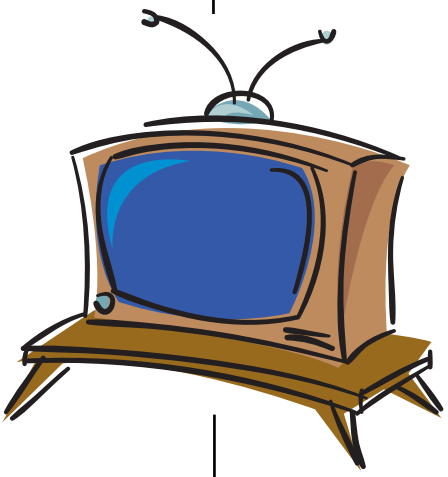
The politician understands the environmental impact that forestry is having, but also sees the benefits of the industry. Logging gives jobs to people in this area who would otherwise not have work. In turn, the nearby towns are thriving and more people are moving to them.

- Give each student 5 to 10 minutes to prepare their "roles" by coming up with a brief argument to support their position. If the rest of the group is acting as a "jury", they can use this time to develop questions to ask of the role-players.
- Have the role-players draw straws to determine the order in which they will speak. Each one makes a one-minute presentation stating their case and the reasons why they feel that way. Students must listen to one another and not interrupt when a person is speaking.
- If you have a jury, allow them five minutes to ask questions of the role-players.
- Discuss what you've just heard as a group. What are the pros and cons of logging? Which characters were most effective and why? Are there solutions that can please everyone? Try to come to a consensus.

THE POWER OF THE TUBE

(Suitable for grades 6-8)

Your students likely spend hours in front of the television. But how carefully do they think about the images they see? This activity encourages students to learn through research and to consider the sources of the information the gather.



In the play "Awesome Powers II", Terry sees a news report and commercials on TV about Northern Paradise Resorts. TV provides him with information, but is that information to be trusted?

Television is a form of tech-nology that many of us enjoy. It can be a powerful educational tool and a good way to stay informed about what's happening in the world around us. But like any form of technology, we must make sure we use television wisely. We should always take into account that different people have different perspectives – and it's up to us to decide for ourselves how we feel about things.

And, we should all remember to turn off the TV more often, get some exercise, read a book or play with friends – they don't use as much electricity! And, always make sure to turn off the TV when you leave the room… unless you're just stepping out of the room for a moment.

Monitoring the Airwaves

- Have your students watch the television news for a week. Assign each student to a channel and/or newscast and ask them to make notes on each of the stories. As a class, review list of stories.
- How often do environmental themes come up and what is the context? (i.e., an international convention on the environment, a natural disaster, unusual weather in any part of the country.) Are these stories usually on at the beginning of the newscast or the end? How much time is devoted to them compared with other stories?

Live, from your classroom…

- Have each student choose an environmental topic that most interests them and ask each to do some research (using the library, the internet, and TV news) on current news, information or breakthroughs on the topic.
- Have each student write either a short TV "news story" monologue, or a TV commercial about the topic.
- Have each student read their piece to the class and discuss. How do the commercials differ from the newscasts? Which were the most effective in getting their point across? Were the newscasts fair and balanced or did they tend to be biased? Did the "reporters" do enough research? Or were questions left unanswered?
- Encourage your students to question what they see on TV and read in the newspapers and research all points of view on topics that interest them.

Source:
Resources to Explore and Sources for this Kit, pages 32 & 33.

Specific Learning Outcomes
6-0-1A, 6-0-2A, 6-0-7G, 7-0-1A, 7-0-2A, 7-0-7G, 8-0-1A, 8-0-2A, 8-0-7G

General Learning Outcomes
A2, A3, B5, C5, C6

RESOURCES TO EXPLORE

Resource	*Web Address*
Amazing Environmental Organization Web Directory	www.webdirectory.com
Canadian Global Change Program	www.globalcentres.org/cgcp
Canadian Nature Federation	www.cnf.ca
Canadian Renewable Energy Corporation	www.crec.ca
Canadian Wildlife Federation	www.cwf-fcf.org
Canadian Wind Energy Association	www.canwea.ca
Climate Arc	www.climateark.org
Climate Change Connection	www.climatechangeconnection.org
Climate Change Solutions	www.climatechangesolutions.com
Climate.Org	www.climate.org
David Suzuki Foundation	www.davidsuzuki.org/kids
Earth Day Canada	www.earthday.ca/EDy2k/Home/homefrm1.html
Eco-voyageurs	www.ecovoyageurs.com
Evergreen Foundation	www.evergreen.ca
Fort Whyte Centre	www.fortwhyte.org/fwNews.html
Grassroots Recycling Network	www.grrn.org
Green Group	www.green-group.com
Green Kids	www.greenkids.com
Green Learning	www.greenlearning.com
Green Teacher	www.greenteacher.com
International Institute for Sustainable Development	www.iisd.org/default.asp
International Solar Energy Society	www.ises.org
Journey to Forever Online Biofuels Library	http://journeytoforever.org/biofuel_library.html
Mad Science	www.madscience.org
Manitoba Conservation	www.gov.mb.ca/conservation
Manitoba Eco-Network	www.web.net/men
Manitoba Model Forest	www.manitobamodelforest.net
National Geographic Magazine	www.nationalgeographic.com/ngkids/
Office of Energy Efficiency, Natural Resources Canada	http://oee.nrcan.gc.ca
The Pembina Institute	www.pembina.org
Re.energy.ca	www.re-energy.ca
Refocus: The International Renewable Energy Magazine	www.re-focus.net
SEEDS Foundation Green School Program	www.greenschools.ca/home.html
Sierra Club	www.sierraclub.org
Solar Energy Society of Canada Inc.	www.solarenergysociety.ca
Target Zero Canada	www.targetzerocanada.org
World Energy Efficiency Association	www.weea.org

SOURCES USED FOR THIS EDUCATIONAL RESOURCE KIT

"Schoolyard Trees: Planning and Planting for Survival", Ann Coffey, *Green Teacher*, Issue 66, Fall-Winter 2001.

"Recycling works!", *POP (Protecting our Planet) Magazine*, Volume 7, Fall 1999

www.oee.nrcan.gc.ca

www.evergreen.ca

http://www.earthday.ca

www.tv.cbc.ca/witness/polar/polfacts.html

www.ecokidsonline.com

www.green-group.com

www.resourceconservation.mb.ca

www.web.net/men

www.naturewatch.ca

www.climatechange.gc.ca

www.greenkids.com

GREEN KIDS TEACHER EVALUATION FORM

Green Kids strives to grow, develop and improve each year. Your feedback is extremely valuable to us and helps us to deliver a program that is relevant to your students and their curriculum. Please take a few moments to fill out this evaluation form (feel free to use the back if you need more space) and then fax it to us at (204) 940-4749, or mail it to:

Green Kids
#22 – 221 McDermot Avenue
Winnipeg, Manitoba R3B 0S2

You may also e-mail feedback to us at: joel@greenkids.com.

1) Please rate "Awesome Powers II" on a scale of 1 to 10 in terms of its educational value, as well as its entertainment value.

Educational Value:

1	2	3	4	5	6	7	8	9	10
Poor				*Satisfactory*		*Good*		*Fantastic*	

Entertainment Value:

1	2	3	4	5	6	7	8	9	10
Poor				*Satisfactory*		*Good*		*Fantastic*	

2) What did you like best about the show and why?

3) What did you like least about the show and why?

GREEN KIDS TEACHER EVALUATION FORM

4) Were you able to incorporate elements of the educational resource kit into your curriculum? If yes, which activities and how did you incorporate them? If no, why not?

5) What would like to see in future Green Kids programming? Please consider the play as well as the educational resource kit and the website in your answer.

Optional:

Your Name

School Name

Your e-mail address

Thank You!

GREEN KIDS STUDENT EVALUATION FORM

We want to know what you think about the play "Awesome Powers II"! Please fill out this evaluation form (feel free to use the back if you need more space) and ask your parents or teacher to return it to us by fax at (204) 940-4749 or mail it to:

Green Kids
#22 – 221 McDermot Avenue
Winnipeg, Manitoba R3B 0S2

You may also e-mail feedback to us at: joel@greenkids.com.

1) Please rate "Awesome Powers II" on a scale of 1 to 10 in terms of its educational value, as well as its entertainment value.

Educational Value:

1	2	3	4	5	6	7	8	9	10
Poor				*Satisfactory*		*Good*		*Fantastic*	

Entertainment Value:

1	2	3	4	5	6	7	8	9	10
Poor				*Satisfactory*		*Good*		*Fantastic*	

2) What did you like best about "Awesome Powers II"? Why?

3) What did you like least about "Awesome Powers II"? Why?

GREEN KIDS STUDENT EVALUATION FORM

4) What did you learn from the play that you didn't already know?

5) What do you think of the Green Kids website (www.greenkids.com)?

6) What do you do at home, at school or in your community to be environmentally responsible? Do you recycle? Do you shut off the light when you leave a room? What else do you do?

Optional:

Your Name _____ Your Age _____

School Name _____

Your e-mail address _____

Thank You!

GREEN KIDS BOOKING FORM – 2005 TOUR

2005 Theme: TBA

To book your show for next year, please return this form as soon as possible to us at:

Green Kids
#22 – 221 McDermot Avenue
Winnipeg, Manitoba R3B 0S2

You may also fax it to (204) 940-4749 or e-mail it to joel@greenkids.com.

School Name _____

Street Address _____

City _____ Province _____ Postal Code _____

Contact Name _____ E-mail _____

Telephone _____ Fax _____

Students _____ Grades _____ # Shows desired _____

Show Prices

Location	*1 Show*	*2 Shows*
Winnipeg	$400	$600
Manitoba(outside Winnipeg)	$425	$650
Saskatchewan	$450	$700
Ontario	$500	$750

Early Bird Discounts!

Book before June 30, 2004:	$75 off
Book before October 15, 2004:	$50 off

ANSWER KEY

Test Your Enviro IQ

1) sun
2) water
3) indicator
4) reuse
5) Climate
6) greenhouse
7) ozone
8) Global warming
9) Composting
10) oxygen

What has the forest done for you lately? Lots!

1) food, water
2) photosynthesis, sun
3) carbon
4) erosion, wind
5) nutrients
6) pollution, soil, fertilizers
7) healthy, oxygen
8) buildings, furniture
9) syrup, rice, plants

Make the power match!

Exercise A

1 = C, 2 = A, 3 = B

Exercise B

1) renewable
2) non-renewable
3) renewable
4) renewable
5) non-renewable
6) renewable
7) non-renewable

Danger, Thin Ice!

1) False. Polar bears primarily eat seal.
2) True.
3) False. Global warming will mean that ice breaks up earlier in the year, limiting a polar bear's opportunity to hunt for seals.
4) True.
5) False. Climate change puts permafrost at risk of melting and could cause changes in the soil that will affect the plants that are able to grow.
6) True
7) True
8) False. Moose aren't.
9) True.
10) False. Climate change will affect their ability to hunt and fish and warmer temperatures will thaw permafrost, which will damage roads and building foundations.

Climate change: what's it to me?

Answers: a, b, c, a, c, b, c, c.

Manitoba Curriculum Framework of Outcomes Codes used in this Resource Kit

Specific Learning Outcomes

K-0-4e	Participate in cooperative group learning experiences.
K-0-5c	Record observations using drawings.
K-0-7a	Recognize connections between new experiences and prior knowledge.
K-1-01	Use appropriate vocabulary related to their investigations of trees.
K-1-02	Identify ways in which humans and other animals use trees.
K-1-03	Identify and describe basic parts of a tree.
K-1-04	Explore, sort, and classify leaves, using their own classification system.
K-1-07	Describe seasonal changes in the life of a tree.
K-3-03	Recognize that paper is most often made from trees.
1-0-1a	Ask questions that lead to explorations of living things, objects, and events in the immediate environment.
1-0-2a	Access information using a variety of sources.
1-0-4b	Construct an object or device to solve a problem or meet a need.
1-0-4f	Work in cooperative partnerships and groups.
1-0-7e	Describe, in a variety of ways, what was done and what was observed.
1-1-01	Use appropriate vocabulary related to their investigations of characteristics and needs of living things.
1-1-05	Recognize that plants, as living things, come in different forms.
1-1-07	Recognize that plants, animals, and humans, as living things, have particular needs.
1-1-10	Describe how humans and other living things depend on their environment to meet their needs.
1-1-13	Develop, implement, and evaluate personal and group action plans that contribute to a healthy environment for themselves and for other living things.
1-1-14	Show respect for living things in their immediate environment.
1-3-02	Explore and describe characteristics of materials using their sensory observations.
1-3-10	Use the design process to construct a useful object by selecting, combining, joining, and shaping materials.
1-3-11	Demonstrate ways to reduce, reuse, and recycle materials during classroom learning experiences.
1-4-02	Recognize that the Sun is a source of light and heat.
2-0-4b	Construct an object or device to solve a problem or meet a need.
2-0-7e	Describe, in a variety of ways, what was done and what was observed.
2-2-12	Recognize that air is composed of several gases.
2-2-16	Describe ways humans dispose of solids and liquids to maintain a clean and healthy environment.
2-4-01	Use appropriate vocabulary related to their investigations of air and water.
2-4-10	Describe different uses of water by humans.
2-4-12	Identify substances that pollute air and water, and describe ways of reducing such pollution.
2-4-13	Recognize that clean water is an increasingly scarce resource in many parts of the world, and describe consequences of a shortage of clean water.
2-4-14	Record personal use of water, and identify ways in which they can reduce water usage.
3-1-01	Use appropriate vocabulary related to their investigations of growth and changes in plants.
3-1-02	Observe, compare, and contrast the structure and appearance of several types of plants.
3-1-03	Show respect for plants as living things.
3-1-04	Conduct experiments to determine conditions needed for healthy plant growth.
3-1-05	Recognize that a plant uses the Sun's energy to make its own food.
3-1-06	Use the design process to construct an environment that enhances plant growth.
3-1-10	Care for a flowering plant throughout its life cycle, tracking its growth, and its changes over time.
3-1-13	Describe ways that plants and animals depend on each other.
3-1-14	Describe ways plants are important to the environment.

MANITOBA CURRICULUM FRAMEWORK OF OUTCOMES CODES USED IN THIS RESOURCE KIT

3-1-15	Identify and describe hobbies and jobs involving plants.
3-1-16	Identify how humans from various cultures use plant parts for food and medicine.
3-1-17	Investigate to determine how humans from various cultures make products from plant materials.
3-4-02	Identify and describe various components within a sample of soil from the local environment.
3-4-09	Identify animals found in soil and explain their importance to soil quality.
4-0-4a	Carry out a plan, and describe the purpose of the steps followed.
4-1-02	Recognize that each plant and animal depends on a specific habitat to meet its needs.
4-1-03	Identify the components of an animal habitat.
4-1-07	Investigate and describe a variety of local and regional habitats and their associated populations of plants and animals.
4-1-09	Recognize that plant and animal populations interact within a community.
4-1-13	Predict, based on their investigations, how the removal of a plant or animal population may affect the rest of the community.
4-1-14	Investigate natural and human-caused changes to habitats, and identify resulting effects on plant and animal populations.
4-1-15	Describe how their actions can help conserve plant and animal populations and their habitats.
4-2-02	Give examples of various forms of energy.
4-2-03	Recognize that energy is an integral part of daily life.
4-2-09	Recognize that most objects that produce light also give off heat, and identify objects that produce light but give off little or no heat.
4-4-12	Investigate and describe ways in which soil erosion is controlled or minimized in their community and in communities around the world.
4-4-15	Identify natural phenomena and human activities that cause significant changes in the landscape.
5-0-8C	Recognize that technology is a way of solving problems in response to human needs.
5-0-8G	Describe positive and negative effects of scientific and technological endeavours.
5-0-9E	Be sensitive to and develop a sense of responsibility for the welfare of other humans, other living things, and the environment.
5-0-9F	Frequently and thoughtfully evaluate the potential consequences of their actions.
5-4-02	Describe how weather conditions may affect the activities of humans and other animals.
5-4-13	Explain how the transfer of energy from the Sun affects weather conditions.
5-4-17	Identify factors that influence weather and climate in Manitoba and across Canada, and describe their impacts.
5-4-18	Recognize that climates around the world are ever changing, and identify possible explanations.
6-0-1A	Formulate specific questions that lead to investigations.
6-0-2A	Access information using a variety of sources.
6-0-7G	Communicate methods, results, conclusions, and new knowledge in a variety of ways.
6-0-7H	Identify connections between the investigation results and everyday life.
6-0-8G	Describe positive and negative effects of scientific and technological endeavours.
6-0-9E	Be sensitive to and develop a sense of responsibility for the welfare of other humans, other living things, and the environment.
6-0-9F	Frequently and thoughtfully evaluate the potential consequences of their actions.
6-1-04	Identify living things using an existing classification key, and explain the rationale used.
6-1-08	Observe and describe the diversity of living things within the local environment.
6-3-05	List electrical devices used at home, at school, and in the community, and identify the human needs that they fulfill.
6-3-18	Describe factors that affect the consumption of electrical energy, and outline an action plan to reduce electrical energy consumption at home, at school, or in the community.
6-3-19	Describe ways in which electricity has had an impact on daily life.
7-0-1A	Formulate specific questions that lead to investigations.
7-0-2A	Access information using a variety of sources.
7-0-7G	Communicate methods, results, conclusions, and new knowledge in a variety of ways.

MANITOBA CURRICULUM FRAMEWORK OF OUTCOMES CODES USED IN THIS RESOURCE KIT

7-0-8G Discuss societal, environmental, and economic impacts of scientific and technological endeavours.
7-0-9E Be sensitive and responsible in maintaining a balance between the needs of humans and a sustainable environment.
7-0-9F Consider the cause and effects relationships of actions and decisions.
7-1-05 Identify and describe positive and negative examples of human interventions that have an impact on ecological succession or the makeup of ecosystems.
7-1-06 Identify environmental, social, and economic factors that should be considered in the management and preservation of ecosystems.
7-1-07 Propose a course of action to protect the habitat of a particular organism within an ecosystem.

8-0-1A Formulate specific questions that lead to investigations.
8-0-2A Access information using a variety of sources.
8-0-7G Communicate methods, results, conclusions, and new knowledge in a variety of ways.
8-0-8G Discuss societal, environmental, and economic impacts of scientific and technological endeavours.
8-0-9E Be sensitive and responsible in maintaining a balance between the needs of humans and a sustainable environment.
8-0-9F Consider the cause and effects relationships of actions and decisions.
8-4-12 Identify factors that can cause flooding either individually or in combination.
8-4-18 Identify environmental, social, and economic factors that should be considered in the management of water resources.

General Learning Outcomes

B1 Describe scientific and technological developments, past and present, and appreciate their impact on individuals, societies and the environment, both locally and globally.
B2 Recognize that scientific and technological endeavors have been and continue to be influenced by human needs and the societal context of the time.
B5 Identify and demonstrate actions that promote a sustainable environment, society and economy, both locally and globally.
C1 Recognize safety symbols and practices related to scientific and technological activities and to their daily lives, and apply this knowledge in appropriate situations.
C4 Demonstrate appropriate critical thinking and decision-making skills when choosing a course of action based on scientific and technological information.
C5 Demonstrate curiosity, scepticism, creativity, open-mindedness, accuracy, precision, honesty, and persistence, and appreciate their importance as scientific and technological habits of mind.
C6 Employ effective communication skills and utilize information technology to gather and share scientific and technological ideas and data.
C8 Evaluate, from a scientific perspective, information and ideas encountered during investigations and in daily life.
D1 Understand essential life structures and processes pertaining to a wide variety of organisms, including humans.
D2 Understand various biotic and abiotic components of ecosystems, as well as their interaction and interdependence within ecosystems and within the biosphere as a whole.
D4 Understand how stability, motion, forces, and energy transfers and transformations play a role in a wide range of natural and constructed contexts.
D5 Understand the composition of the Earth's atmosphere, hydrosphere, and lithosphere, as well as the processes involved within and between them.
E2 Describe and appreciate how the natural and constructed world is made up of systems and how interactions take place within and among these systems.
E4 Recognize that energy, whether transmitted or transformed, is the driving force of both movement and change, and is inherent within materials and in the interactions among them.