



ECO Canada (formerly the Canadian Council for Human Resources in the Environment Industry) is a not-for-profit corporation dedicated to increasing the quality and quantity of environmental human resources for the public and private sectors. Since 1992, ECO Canada has worked with students, educators, practitioners, and employers to create career development tools and document labour market information for the Canadian environmental sector.

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INTRODUCTION

WELCOME TO ECO CANADA'S FACILITATOR'S KIT

ECO Canada's Environmental Career Awareness Facilitator's Kit is designed to introduce students in Canadian high schools to the potential of choosing careers in the environmental sector. The theme of "It's Your Environment. Make It Your Career" is an expression of the idea that environment-related work is all around us, in our own communities and farther afield. ECO Canada's goal is to reach as many Canadian students as possible in order to inspire them to consider a career in this vital and growing sector. To accomplish this goal, this package focuses on two areas of study: Career Planning and Environment. The activities in this package are divided into two distinct groups based on these study areas. This approach reflects the belief that more students can be reached by appealing to teachers who cover both of these areas of curriculum. Links to appropriate curriculum learning outcomes are listed in the References and Resources section by province.

CAREER PLANNING

If you are covering career-planning objectives, consider using the first two activities in this manual to encourage your students to "Imagine the Eco-Possibilities." Environmentally related careers range from communications and advertising, to engineering and scientific research. It is a growing field in Canada and around the world, and environment-related careers encompass a broad range of skills, interests, and educational requirements. Whether students want to work outdoors or in a lab, if they want to teach, explore, plan, or communicate, there is an environmental career to suit them.

ENVIRONMENTALLY RELATED STUDIES

If your role is to use teaching materials that explore environmental issues such as air, soil, water, or human impacts on the natural environment consider using the activities in the second section of this manual. These materials lead to a simulation activity that will encourage your students to explore 'real world' environmental issues. Set in the fictional community of Echo-Vale, the simulation offers an opportunity to examine the nature of environmental challenges. By taking on the roles of a variety of 'experts' and members of a small community, your students will have an opportunity to research, plan, assess, and evaluate problems and work cooperatively to develop solutions and move towards a common goal.

A PRACTICAL ENVIRONMENTAL FOCUS

Whichever learning opportunity you choose your students will be exposed to the notion of a career in the environmental field. They will have an opportunity to see and explore the value and satisfaction that a career in the field can bring. As well, this guide will help you meet or add to some of the learning outcomes or expectations associated with your province's curriculum. It is designed to meet as many outcomes as possible in the field of career development and learning related to environmental studies. In addition, the learning may meet other curriculum objectives such as those related to presentations, research skills, and dialogue opportunities.

For details about the outcomes associated with the activities in this manual, please take a moment to read through the Curriculum Links pages in the References and Resources section of this manual.

DVD TOOL

A DVD aimed at your students is included in this package. Activities in both sections make use of the DVD. This visual support tool explores environmental careers in a fast-paced and interesting way that will appeal to your learners. The DVD can also be viewed on-line at the ECO Canada website: www.eco.ca.

WEBSITE

You can download the activities in this manual from ECO Canada's Educator website, which will allow you to edit and personalize the activities for your class and the way you teach. These activities are designed to complement ECO Canada's Student website, which includes a library of occupational profiles, interest matching tool, and resource information. Both the Educator and Student sites can be accessed after signing in at www.eco.ca.

You can also use www.eco.ca to order additional copies of the Facilitator's Kit. Or you can send an e-mail, call, or fax us at the numbers on the back of this package. We would be very pleased to hear from you and to assist you in any way we can.

Please take a few moments to look through this package to find some interesting and involving activities that will appeal to your students. Remember that the materials are compatible with many learning outcomes for your curriculum!

Note: The content of the Facilitator's Kit can be copied and distributed freely by students, educators, counsellors, and practitioners for use in career development, research, or classroom activities. No part of the Facilitator's Kit may be sold or traded for personal or corporate gain.

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SECTION ONE

CAREER FOCUSED LEARNING

INTRODUCTORY NOTE FOR TEACHERS

The activities in this section focus on careers and career planning. Although the primary goal of these linked activities is to raise consciousness about environmental careers, the skills and thinking fostered by these activities relate to careers of any sort.

Please note that if students have not already completed an overall self-assessment in the course of your curriculum studies, it would be helpful to have them undertake this activity before they embark on career research. There are a number of useful self-assessment tools available on-line and some website addresses are included in the resources section of this manual. Your Ministry of Education or your school may have self-assessment tools available as well.

The ECO Canada website contains a self-assessment tool that is designed specifically to help students determine which environmental career might be most appealing to them based on their own personal interests and preferences. It is not intended as a broad self-assessment, but it is a very useful tool for students to access. One activity in this section is built around the use of this simple tool to help students see the value of developing a career profile as part of their ongoing research into career opportunities.

ACTIVITY SERIES OVERVIEW
AND INTRODUCTION

This activity series is for students who have already begun to explore careers. It centres on the notion of exploring beyond the world of easily visualized careers to build an understanding of the importance of visualizing careers in terms of the everyday work and work environments they represent. The activities can be used to reinforce the idea that exploring the areas of work that are sometimes unrecognized or unknown in the world and in their own community is a worthwhile effort.

The first activity in this section focuses on the need for doing research and experimenting with new ideas when students are beginning their career planning. If your students have not yet undertaken a self-assessment process to determine more about their personal preferences, you may wish to begin by encouraging them to use a self-assessment tool. There are a few on-line assessment tools available; some of them are listed in the Resources Section of this manual. Self-knowledge is an excellent starting point for career research and selection.

The activities in this section lead to the use of the Career Matching tool on ECO Canada's website, which will assist students in determining the type of environmental career best suited to their personal interests and preferences. While this is a useful tool for narrowing the search field for students, this is not an overall self-assessment.

CAREER ACTIVITY ONE:

CAN YOU IMAGINE THE POSSIBILITIES?

Required Materials:

Chart paper, white board, or chalkboard

DVD/ TV or computer/projector

Time Required: 40-45 minutes

TEACHER INTRODUCTION

This activity begins by examining the power of imagination and explores the idea that searching for a career means not only understanding your own personal characteristics, interests, and goals, but also requires being able to imagine yourself in a variety of roles.

Introduce the activity by making a few remarks about the power of imagination and the notion that imagination is an important tool to use in exploring the future. You may use the quote from Albert Einstein below or some other appropriate thought-provoking tool.

Post the quote in the room on a board or on chart paper and ask the students to think about it for a moment and offer their ideas about what Einstein meant:

“Imagination is more important than knowledge. Knowledge is limited. Imagination encircles the world.”

Discussion in the group should include ideas such as:

- Imagination is the foundation of all our scientific/technical thinking and the way in which humans make discoveries of all kinds.
- Imagination may be the one way in which everyone can share in knowledge.
- Imagination can take you anywhere—well beyond the boundaries of what is currently possible. That is how inventions are born.
- Knowledge can be limited by a person's access to information or exposure to learning. Imagination, however, is not limited by anything.
- Imagination may be evoked by and may evoke more than language—it is common to all people everywhere.

- Imagination is the spark that kindles ingenuity, interest, and action.
- Imagination is the foundation of new ideas and dreams that the dreamer can make real through knowledge and education.

Be sure to add any of these points that are not raised by the students in the discussion.

IMAGINATION EXPERIMENT:

Suggest that imagination is an important tool to use when beginning to determine your future and the direction you want to take in your life. A good way to start exploring the future with imagination is by doing some simple imaginative experiments.

Begin by asking the students to close their eyes for a moment. Explain that you are going to say some words and as you say each word, they should form a picture in their minds of what that word means.

Start with some easy examples. Choose words such as park, school, etc., that are most likely to provoke images of surroundings with which they are familiar. When you have covered three or four words, ask them to open their eyes. Now ask if these words brought pictures to their minds easily. Ask if they could picture themselves in that setting.

When students have made some comments, point out that it is easy to picture ourselves in a setting we are familiar with. We may be able to imagine ourselves in a park, for example, simply because we have already been in many parks.

Now suggest that you continue with this experiment. Have the students close their eyes again and ask them to form a picture of the words you say. Point out that if they hear a word for which they cannot get a clear picture they should raise their hand. Use career oriented words. Begin with words for which clear pictures can be readily formed, such as teacher, doctor, nurse, construction worker, restaurant server, etc. Pause after each word to allow the students to picture each profession. Ask the students if they can see a person doing each of the jobs you have mentioned, and if so, point out that these are all familiar jobs.

Now ask them to continue the experiment and remind them to raise their hands if they can't get a clear picture from the word. Begin to introduce words that evoke careers that may be less familiar. Choose a few career words from the DVD that accompanies this package: microbiologist, water treatment plant operator, environmental communications officer, environmental educator, biologist, zoologist, environmental policy planner, environmental engineer, etc.

Observe the students. They will likely begin to raise their hands to indicate they cannot get a clear picture. When a majority of the students have indicated they cannot visualize the career ask everyone to open their eyes.

ROUNDTABLE DISCUSSION (10 MINUTES)

Begin a roundtable discussion with students, ensuring everyone takes part in the debriefing of this imagination experiment. Pose a series of questions: “Why was it harder to create a picture for some words than it was for others?”, “When you pictured a person doing a job, could you picture yourself doing that job? Why or why not?”

Be sure the following ideas are explored in the discussion:

- It is difficult to imagine things for which we have no frame of reference, no exposure, or no experience.
- It is harder to imagine ourselves doing a job or having a profession of some type if we can't picture what the work in that career is like, or if we have no idea that such a career exists.
- Some careers are 'invisible' because we are not always aware that the job is being done. For example, water treatment is something we rarely think about, so imagining ourselves as water treatment operators is hard to do.
- If you can't imagine what the career means then you can't assess it to say whether or not it is something you might enjoy.
- Some invisible careers are around us in our community every day.

BRAINSTORMING (15 MINUTES)

Now ask the students to brainstorm a list of ways we can boost our imagination about our future career and gather some sense of the reality of careers we imagine. Ask for a list of places and ways we can get more ideas and information about jobs or careers. Remind the students that for now they need to suspend all critical judgement and create as broad a list of ideas as possible. Label a chart page or a chalkboard area with the title: Exploring Careers. (If you have already discussed these ideas as part of your course material, you may choose to simply review them with your class.) When they have thought about this for a few moments, ask for their ideas.

Be sure the list includes, but is not limited to:

- The internet
- Job fairs
- Internships or co-op jobs
- Career services staff within the school
- Gathering work experiences of family and friends
- Talking to people within the community
- Presentations by people working in a variety of jobs
- Videos, DVDs, and other visual tools
- Media resources such as books, television, and magazines
- Job site visits, such as “going to work with a parent” days, tours of various businesses, etc.
- Touring the community to explore jobs

Point out that some methods of research will enlarge the job scope locally and others will give a more global look at jobs, careers, and work/life options. Be sure to make the point that not all sources of information are helpful. For example, TV programs often give an inaccurate or distorted vision of a career, such as crime scene investigation shows or hospital dramas, and these job images need to be tempered by reality.

Be sure to point out that however we choose to find the information that will fire up our imagination about careers, we will need a framework or research guide to allow us to gather the kind of information that will be accurate, complete, and as helpful as possible to us.

Raise the question: “What would you need to have or to know to imagine yourself in a career you are not familiar with?”

Students should discuss issues such as:

- A need to picture what people do in that career.
- A need to understand more about the work and what it relates to.
- A need to know where the work is done.
- A need to understand what education is needed.
- A need to find answers to questions such as “Does the career match my interests and preferences, lifestyle plans, salary plans, long term goals, etc.?”

Wrap up the discussion by reflecting back on the quotation that started the activity. Remind the students that imagination can get an excellent boost by undertaking some basic research. Sum up the comments and key points made by students in the discussions.

CHALK TALK: TEACHER INPUT (10 MINUTES)

Now point out that in planning future careers it is a good idea to fuel the imagination with new ideas and then be able to put our imaginings into a context we can visualize. Sometimes we are interested in things and have no idea that our area of interest could easily become our career.

Offer an example such as: “You may have an interest in animals or in preventing or cleaning up toxic materials that may affect the health of people and the environment. You may have an interest in providing healthy air to breathe or water to drink, growing healthy foods, or knowing that you live in a strong and vibrant community. Perhaps you are interested in advertising, design, or construction of buildings, in natural resources, or in science and research. If any one of these areas interests you, you may find that an environmental career is something to consider for your future.”

Suggest that while it is good to have the ability to imagine occupations and career paths, it is also important to know how to move from imagination to reality. Making a career choice involves not only imagining your occupation, but in knowing how to get from where you are right now to that place in the work force. Suggest that this can be accomplished by doing a little research.

Make the point that a career profile helps you understand more about what a person does each day in that career, where they work, and the interests and activities associated with the work. Suggest that before they explore their own career choices, it is a good idea to begin by looking at what a profile can tell you about a career. Explain that once they know more about profiling, they can go on to research a wide range of careers they are interested in and develop a profile for each of them.

HOMEWORK

Assign a homework project for the students to use as a follow-up research activity. Ask students in each team to select one or two careers from the list of occupational profiles found in the References and Resources section of this manual. Ask them to research this career’s profile by signing in to the ECO Canada website. Point out that the website will provide a basic profile of each career. Be sure that each team has enough careers to research to allow every student in the team to research a different career.

Explain to the students that the occupational profiles will add information to their career search and will also show how research and profiling can bring an added dimension to their search for career options by illustrating the day to day work involved in each career.

Ask students to examine the profile of the career they are assigned and use it to develop an outline of what a career profile needs to describe or contain in order to be useful in helping a

person visualize the kind of work the career involves. Suggest that the outline be based on the questions they feel need to be answered when researching a career. Ask them to prepare a list of questions that they think would provide them with a good description of any career.

Allow enough time for the students to carry out this task and ask them to bring their results to the class when you plan to discuss this further.

Please consider suggesting that while they are on the ECO Canada site, students should try the career matching activity. This will help them find out more about which environment-related careers might suit them best.

Teacher's Note: Since there are ready-made profiles on the ECO Canada site, you can use the student's research results in the classroom debrief to discuss what a career profile can do to help bring the work associated with a career to life. In the next class you can suggest that they use the on-line profile as a blueprint for doing their own career profiling. Point out that when they are researching careers they are interested in pursuing, they need to have a good understanding of all the aspects of the career, including a clear picture of what people currently employed in the field feel about their jobs and about their future.

CAREER ACTIVITY TWO:

PROFILES AND OPPORTUNITIES

Introduction

The first part of this activity examines the career profiling information the students have gathered and developed, and explores some of the key questions students may want to ask when conducting career research.

Students will watch a DVD about careers in the environment that will help reinforce the notion that careers, especially environmental careers, can be found all around us, in our community and across the country, and that they represent many interests and many areas of expertise.

The DVD highlights the notion that careers in the environment are not always what a person imagines them to be at first glance: the image of environmental work is sometimes far removed from the reality. The DVD explores careers in business, communications, and science, and presents options that students may not have associated with the environment. If your students have not been exposed to environmental issues education to this point, you may find it useful to set the stage for the DVD by exploring with students some ideas about environmental careers.

Required Materials:

DVD/TV or computer/project (please note the DVD can also be viewed on the ECO Canada website: www.eco.ca)

Chart paper and markers

Time Required: 40-45 minutes

CHALK TALK AND DISCUSSION: PROFILES (10 MINUTES)

Begin by reflecting back to the notion explored previously that imagining yourself in a specific career is easier when you have a picture of the type of activities and the day to day work associated with a career.

Ask the students to describe the profiles they saw on the ECO Canada website and discuss how well they understood the work involved in their assigned career after visiting the site. Encourage discussion around the thinking that a snapshot of what the daily work in an occupation is like helps us to imagine a career in that area more accurately. Link back to the idea that you can't imagine yourself doing any job unless you have a good idea of what the job actually entails. Point out that by profiling, they are going beyond the basic issues such as education and salary that are normally related to career searches and delving a little deeper into the career paths available. Profiles really help you gain a glimpse into the daily life of real people in a given career.

Ask if any of the students used the career-matching tool on the website. If so, raise some discussion about the results. Ask some questions to help determine if the students were surprised at the results of the ECO Canada career matching. Since many of the students may not have been aware of the broad scope of careers that fall under the environmental umbrella, the career-matching tool may have provided them with some unexpected matches. If this occurs, take this opportunity to explore the notion that it is important to use imagination and plenty of research to help uncover as many potential possibilities as you can each time you create a career portfolio or examine your future options.

INFORMATION GATHERING: A MASTER LIST WITH STUDENT INPUT (15 MINUTES)

Now ask the students to contribute one of the questions they developed to help them understand more about any given career. Collect the questions on a piece of chart paper and post the page in the room when the list is complete. Leave the list posted for a number of periods to allow you to reflect back to it as you explore further career issues.

The master list should contain, at minimum, the following questions:

- What kinds of interests would you need to have to make this career a good match for you?

- Where can you work in this career: anywhere in the world, in Canada, in my province, or in my community?
- Is this a growing career market: are there jobs available now in this career and are there likely to be jobs in the future?
- What type of work is involved in this career?
- Do you work indoors or outside?
- What skills are needed for this career?
- What is the pay scale for jobs in this field?
- What education is required?
- Does this career offer opportunities for change or growth?
- What rewards does this career offer?
- Do people in this field work alone or with others?
- How do people in this field describe their work: is it enjoyable, challenging, satisfying, etc.?
- Are jobs in this career field thought to be secure?
- Who or what benefits from the work done in this field?
- What kinds of hours does this career usually entail: shift work, weekends, etc.?

Add to this list any questions or areas of interest expressed in the discussion or mandated by your curriculum content.

Offer the students feedback on the list of ideas they presented and wrap up by making a few remarks that express the importance of examining a range of careers and ideas for the future. Point out that some careers, such as environmental careers, are often thought of or imagined in a much narrower scope than reality presents.

DVD (15 MINUTES)

Introduce the DVD by pointing out that while environmental careers are just one of many options available, they are often overlooked. These careers offer personal satisfaction, and since our environment is our own community, our province, Canada, and the planet, there are plenty of careers to offer in this growing field. Point out that as students watch the DVD they may be in for some surprises.

Now ask the students to watch the DVD presentation. Divide the students into three groups. Ask each group to watch for the answer to one of these questions:

- 1) The careers shown on the DVD are divided into several categories. What are they?
- 2) What are some of the places or types of settings where people in the environmental field work?
- 3) What careers are available that may not involve specific environmental science training or education, but are still considered to be in the environmental field?

Teacher's Note: Careers are shown in three categories: business, communications, and science. The DVD shows people working in all fields, for example, business, government, parks, etc. Some of the careers highlighted in the DVD that do not specifically require technical environmental science training are environmental communications officer, sustainable architect, and environmental educator.

DISCUSSION

When the DVD has finished playing, ask each group to offer their responses to the questions you posed. When the responses have been discussed, ask the students what surprised them most about the careers shown in the DVD. Raise some questions with your students for dialogue and discussion such as:

- Which of the careers on the DVD can be found right here in our community and all across the country?
- Think about the range of lifestyles these careers represent—city living, country living, in the field, inside an office, etc. How do these environmentally focused careers compare to other types of careers?”

Ensure that students discuss the variety of location, the enthusiasm of the workers, and the positive nature of the careers shown on the DVD. Relate this to the larger picture you are painting in your careers coverage by summing up their discussion with some remarks about the importance of understanding the lifestyle, work location, and the feelings of satisfaction that any job engenders before considering it as a career.

FOLLOW-UP

Have each student choose at least one career in any field in which they might be interested. Ask them to visit a few other websites and do some additional research so that all of their questions about the career are answered and they can create a career profile. Provide the students with some of the internet career sites listed in this manual in the References and Resources section. Have them use the master list of questions they have developed in their research efforts. If it better suits your class needs and time frame, you can have a team create one profile rather than ask each student to create one individually.

Be sure to remind your students to reflect back on their self-assessment results for guidance in finding careers they feel suit their interests and abilities.

SET THE STAGE:

IDEAS FOR THE CLASSROOM

POST SOME THOUGHT-PROVOKING IDEAS: A CLASSROOM BULLETIN BOARD

You may wish to encourage your students to think broadly about careers and career options by using some thought-provoking quotes and ideas in displays around the classroom. You may choose to post these on a board in your classroom along with photos, illustrations, or other display materials. Consider offering each student a handout containing a bibliography of current career focused books and publications, articles found in local newspapers, and other informational tools. Be sure to include some environmental career information in your offerings. Some general and environmental career ideas are shown below.

“Ideas are like rabbits. You get a couple and learn how to handle them, and pretty soon you have a dozen.” John Steinbeck, American novelist (1902–1968)

“It is not enough to have a good mind; the main thing is to use it well.”
Rene Descartes, French philosopher, scientist, and mathematician (1596–1650)

“The gods had condemned Sisyphus to ceaselessly rolling a rock to the top of a mountain, whence the stone would fall back of its own weight. They had thought, with some reason, that there is no more dreadful punishment than futile and hopeless labour.”
Albert Camus, French-Algerian novelist (1913–1960)

“Find a job you like and you add five days to every week.”
H. Jackson Brown, Jr., American novelist (1940–)

“The best way to predict the future is to invent it.”
Alan Kay, American computer scientist (1940–)

Teacher’s Note: You may choose to spend some time having students discuss some of these quotations and exploring the meaning behind them.

HOW DO YOU SPELL SUCCESS?

Recent U.S. studies indicate that only about 15% of success in business is laid at the feet of technical excellence, while 85% is related to the ability to communicate—in marketing, managing, and planning functions.

“Failure is not reaching your goal, but in having no goal to reach.”

Benjamin Mays, American minister and educator (1894–1984)

“The indispensable first step to getting the things you want out of life is this: decide what you want.” Ben Stein, American humorist (1944–)

SECTION TWO

ENVIRONMENTALLY FOCUSED LEARNING**INTRODUCTORY NOTE FOR TEACHERS**

The environmental learning activities in this section are divided into two areas: review tools to use in preparation for the simulation and the actual simulation. These review activities can be used to focus the student's thinking on the interrelated nature of environmental impacts and draw their attention to the ways in which environmental issues affect people and communities across the globe. If you have already covered this approach with your students, you may choose to move directly to the simulation.

The primary purpose for the simulation activity is to encourage students to explore the way environmental challenges impact the world we live in and how a variety of skilled environmental practitioners can help improve environmental quality and the quality of human and animal life.

The simulation offers students an opportunity to be creative, research new information, identify and solve problems, work both independently and in small teams, make decisions, and hone their communication skills.

The simulation is intended as a culmination of key information in the area of environmental education. It takes place in a community and encompasses several key and common environmental challenges facing Canadian communities. It could take place anywhere in Canada, and you can alter or adjust the simulation in any way you wish to make it more relevant to local issues and to your students. A copy of the simulation is also available for download from the Educator portion of the ECO Canada website.

TIMING

The simulation in its simplest format can be run in two classroom periods (approximately 90 minutes), or can be run over several periods. It can also be run throughout the year at periodic intervals as suits your delivery of course content relative to environmental issues learning. Consider partnering with other teachers to run this as a half-day activity. The format and interaction is likely to meet learning outcomes from other areas of the curriculum, such as language arts and civics. This would allow other teachers to participate and offer your students an opportunity to work through the entire scenario in one event setting.

LEARNING BENEFITS

This simulation allows students to see the impacts and effects of environmental damage, environmentally related decisions, and environmental legacies of the past as they appear in a real-world setting. You may change the content of the simulation easily by adding different issues to the challenge to reflect issues in the news or in your community.

FOLLOW-UP

A wide range of follow-up activities are possible. Consider having your students organize a community event such as tree planting, stream clean-up, or other environmentally positive actions. Contact nurseries and other potential suppliers to gather their support for an outdoor initiative. Consider having your students visit a local recycling centre or undertake a tour of water and wastewater facilities if these are offered. These opportunities would not only illustrate the importance of environmentally protective infrastructure, but would also offer students a first hand look at a number of environmental careers. Check the ECO Canada website for additional ideas for student activities.

CONTENTS

The environmental activities section contains:

- Introductory activities
- Simulation preparation steps
- The simulation materials: the scenario description, discussion guide for students, presentation guide for student use (optional), and the simulation leader's background notes

Required Materials:

Copies of the discussion guide, scenario, and role-play notes for students to use
DVD/TV or computer/projector
Overhead projector (optional)

PRE-SIMULATION ACTIVITY**ENVIRONMENT AND THE WEB OF LIFE****PURPOSE**

To explore the interrelated nature of environmental issues and their impact on people and communities.

INTRODUCTION

If your students are already familiar with these concepts you may choose not to use this Web of Life approach. However, consider revisiting the key thinking with your students before they begin to work on the simulation.

You may use the pre-made Web of Life diagram included in the References and Resources section of this manual or you may draw your own version of the diagram.

Required Materials:

Chalkboard/chart paper

Web of Life diagram

DVD/TV or computer/projector

Time Required: 40-50 minutes

CHALK TALK AND BRAINSTORMING (15 MINUTES)

Introduce a definition of environment as a review. You may use the definition below or one that comes from your own curriculum materials.

Environment is air, land, water, and all other conditions and influences under which humans, plants, and animals live and develop.

Discuss the definition with the students and be sure that the point is made that the definition implies that the environment is complex and covers broad areas.

Now ask the students to think for a moment about an environmental incident they may have heard or read about anywhere in the world. Ask them to jot down the first five or six incidents they think of: it does not matter when or where they took place or the source or cause of the incident. Indicate that these are events that caused negative impacts, either change or damage to the natural world. (Part of the value of this activity is simply that it will allow you to understand what the students think of as an environmental incident, so do not give too much guidance to their thinking.)

When you have given them a few moments to think about this, begin to collect the incidents and create a list of them on a chalkboard or chart paper.

The list may encompass a wide range of incidents, some recent and some historical. Their incident list may contain:

- Historical but well known incidents such as the Exxon Valdez, Chernobyl, Bhopal, the tire fire in Hagersville, Ontario, train derailments in Canada leading to chemical or other hazardous spills, water contamination incidents,

- floods, deforestation, etc.
- Local incidents.
- More recent incidents such as the tsunami in Indonesia, earthquakes, oil tanker spills and fires, war in Iraq, etc.

When the list is complete, ask the students to look it over and identify what these incidents have in common. The following points should be made by the group:

- Many are the result, directly or indirectly, of human activities.
- Many are related to the energy industry: nuclear, oil, etc.
- Many relate to more than one aspect of the environment: soil, water, air, or some combination of the three.
- They have long-term impacts.
- They usually represent a challenge to clean up, if it is possible to clean them up.
- They have a serious economic impact.
- They often impact humans and all other living things significantly.

SUMMARY (2 MINUTES)

Point out that these are headline incidents and are the ones that stay in our minds. Make the point that many small incidents occur every day and are not considered newsworthy or not spotted by people until they become larger problems. Preventing incidents that are a result of human activity and cleaning up or remediating the sites of past incidents is the focus of many professionals in the environment industry today.

WEB OF LIFE (18 MINUTES)

Now introduce the Web of Life diagram. You may choose to use a blank version and have the students fill in the web by asking them for the elements that are required to support life. Or you may use the completed diagram if you feel that they already have a good grasp of this concept.

When the diagram is complete, initiate a discussion about the interrelated nature of the elements of the web. Be sure that everyone understands that to have an impact on one part of the web is to have an impact on other areas of the environment. You may use the quotation from Chief Seattle below as an illustration of the key message.

“Whatever befalls the earth befalls the sons of the earth, all things are connected like the blood which unites one family. Man did not weave the web of life, he is merely a strand in it. Whatever he does to the web he does to himself.” (1886)

Initiate discussion around the quotation to explore the issues highlighted by both the web diagram and the quotation. Ask the students for examples or offer suggestions. For example, air pollution contaminates air making it hazardous to the health of humans and animals. These pollutants then contribute to acid rain, which affects soil and plant life when it falls. Choose an example with which you are most comfortable.

SUMMARY (2 MINUTES)

Sum up the discussion by pointing out that there has been concern about the environment for a very long time and that we are beginning to recognize at every level and in every area of society the importance of positive environmental actions.

DVD (15 MINUTES)

Introduce the DVD and explain that this presentation will showcase environmental careers. Explain that this will help students think about the types of careers that are available in the environmental field and that during the simulation they will play roles and may be assigned to one of the careers that the DVD illustrates.

When the DVD is complete, discuss with the students the scope of careers it showcases. Raise questions such as “What surprised you the most about the careers shown in this video?” It is likely that many of the careers shown in the video will be new ideas, and many are likely to be careers they had not previously thought of as environmental. Relate the scope of careers in this field back to the definition of environment and the web of life. Point out that working in the environmental field means working in a variety of industries, doing a wide range of jobs, and using a broad scope of skills in your everyday work.

ENRICHMENT ACTIVITY: DIALOGUE AND DEBATE

You may wish to enrich the discussion and presentation skills of your group by engaging them in exploring environmental issues. You may choose any topics or any thought-provoking statements you wish. Below are some examples and ideas for debriefing the discussions.

Divide your class into small teams representing air, land, and water. Ask each team to research the ECO Canada website and find career profiles whose skills and training are focused on environmental protection in the area to which they have been assigned. Ask them to take on the role of the career person they choose. For example, if they choose water, one person in the group may take on the role of a water treatment plant operator, one person may be a water quality monitoring technician, and another may choose to take on the role of an environmental engineer, etc.

Assign the teams to examine one of the thought-provoking statements below and prepare to present pros and cons for each of them. If it suits the needs of your group, you may wish to make this an activity focused on presentation skills or on the knowledge and understanding of environmental issues.

When the students have prepared their material, ask each group to make a 5-10 minute presentation agreeing with and supporting the ideas in the statement. At the same time, have another member of the group make a 5-10 minute presentation disputing the ideas in the statement. Encourage general group comments and questions following the presentations.

SOIL

Contaminated soil has always been an issue as long as there have been people on the planet. Pesticides, herbicides, oil, gas, hazardous wastes, and other potential contaminants are a fact of modern life. They can't be banned and making environmentally friendly versions is too costly. We just need to have better and cheaper methods for clean up whenever accidents occur.

WATER

Our planet is mostly made up of water so water resource protection is not necessary. We can always access water from other places if our own supplies run short or become unsafe. Besides, it's not really practical to try to make and enforce laws to protect water. It is better to spend money and energy on ways to clean up drinking water before it is used. That would be the best form of water protection possible.

AIR

We all have cars and we need to drive them; this is a big country and the car is the only way to get around in any practical sense. While it is true that more than 40% of our air pollutants come from vehicles, there is no way to avoid that or change this in Canada. We should be putting funds into finding ways to live with poor air quality. We need to focus on trucks and move more of our shipments by rail. That would leave us free to drive and cure the air quality problems.

DEBRIEFING THE DIALOGUE

A number of positive and negative points can be raised by each of the statements. Be sure that the discussion, at minimum, raises these key points:

Soil:

- Soil remediation is costly and sometimes very difficult to carry out.
- Contaminated soil often leads to contamination of groundwater.

- While it is not practical to ban all potential hazardous substances, it is possible to research better and safer ways to achieve the same results. This has been going on for many years and many new products have been developed. An increase in demand for these products will mean it is good, sound business to research and create more of them.
- There will always be a need for clean-up tools since a zero accident rate is unlikely. The research and development of these tools creates employment and generates a positive economic contribution.

Water:

- Useable or potable water is at a premium on earth. Of all the water on the planet, only about 1.5% is suitable for drinking.
- Bringing water across long distances is costly and usually impractical.
- It is difficult to enforce water protection laws, but not impossible. One important tool is education and information programs. These help people understand the importance of taking positive action.
- Clean-up tools and techniques are becoming increasingly sophisticated and more and more costly. Prevention is by far the cheaper and safer alternative.

Air:

- It is difficult to get around in Canada without adequate public transit systems. More frequent and reliable services would help encourage people to use public transit and put fewer cars on the road.
- More people are also biking, telecommuting, and car-pooling. These types of reduction actions are having a positive effect. Simply cutting down the unnecessary trips made each week by individuals in their cars would radically reduce air pollution.
- Smaller and more fuel-efficient vehicles, hybrid vehicles, and other conservation efforts could greatly reduce the impact of vehicles on air quality.
- Consider the health risks associated with air pollution and the resulting costs. Costs such as absenteeism at school and in the workplace and the health care costs of illness among children and elderly citizens makes it far cheaper to invest in air pollution prevention strategies than to try to remediate the effects.

SIMULATION ACTIVITY

INTRODUCTION**Echo-Vale: A Community Challenge**

This is an interactive problem solving simulation for use in environmental studies and environmental careers learning settings. It can be used in a variety of venues: secondary schools, youth organizations, or community organizations. It is designed primarily for students at the secondary school level but is also suitable for use in any adult learning environment.

The simulation explores the environmental challenges facing a hypothetical community that could be anywhere in Canada. You may adapt the content in any way that suits your location and classroom, including adapting the scenario to incorporate local issues. As it stands, the simulation covers these key environmental areas:

- Water quality issues, both surface and groundwater.
- Air quality.
- Sustainable business.

You may add other issues or concerns that are important to your community or are particularly relevant to the course of study in which your students are involved.

The simulation explores a community that has historical sources of contamination for both soil and water, as well as some current practices that affect water quality. The community is searching for a plan to move forward and build on the community's ability to attract tourists and outdoor enthusiasts. The participants will examine these areas of concern and plans for the future to develop a cooperative plan for dealing with the existing issues and preventing new environmental concerns.

Participants will play roles representing a variety of groups both inside and outside the community. Everyone involved in the activity will need to conduct a little research, involve themselves in small team dialogues, and participate in problem solving and decision making activities. There are no right or wrong answers because the purpose of the activity is not to showcase environmental expertise, but rather to help students understand the ways in which education, information, and cooperation can help protect our environment and promote environmental clean-up. In addition, the scenario is intended to help make the point that our environment affects our community, our health, and our economic well-being.

Participation in this activity develops skills and promotes dialogue, understanding, and consensus building around complex environmental issues. The activity helps people in diverse settings appreciate and understand the complexity of environmental issues, the importance of environmental sustainability and quality to a community, and the diversity of views and needs among members of a community.

While it is not possible to provide detailed information about each of the key topics this simulation covers, this section offers an overview of the issues. The short article below provides an overview of some of the key issues covered in the simulation.

Environmental expertise is not required to run or debrief the activity. The key issue is to encourage students to think about the challenges the community faces and come up with some possible ways to meet those challenges.

BACKGROUND ARTICLE:
THE COMMON COMMUNITY

No matter where you live in Canada, it is likely that your community has some situations, issues, and concerns in common with other communities across the country. Echo-Vale, the fictional community in the simulation, is designed as an “everyplace” setting, depicting some extreme conditions for the purpose of learning.

Every community in the country faces a certain number of environmental concerns. Some are a legacy of the past and some are the result of current practices. Each of these concerns may relate to air, land, and water.

Canada defines environment as “air, land, and water and all other conditions and influences under which humans, plants, and animals live and develop.” This definition shows the complex and interrelated nature of environment. An impact on one area of environment inevitably leads to impacts on other areas.

One example of this concept is acid rain. Acid rain begins as an air quality issue and ends up affecting plants, soils, and water sources. Positive impacts such as water pollution prevention efforts may be aimed at the protection of surface water, while in other communities they are primarily aimed at protecting groundwater. Since surface water seeps into groundwater in many areas, and groundwater may rise up into rivers and lakes, by protecting one water source you are protecting both.

Although we usually like to think of air quality issues as the result of big industry, and sometimes we even choose to point the finger at big industry in the United States, the fact remains that much of the air pollution we are faced with today is generated on our own roads and highways. Even the weed trimmers and lawn mowers operated by residents of a community contribute to declining air quality.

It is human nature to want someone else to blame for complex issues such as environmental contamination. We often overlook the impact each person and each household can have on both the problems and solutions.

Not only do environmental impacts spread throughout the web that forms our environment, the impacts are often felt by humans and other living things in a variety of ways. For example, air quality can affect human health as well as plant and animal health. It may also damage some industries such as tourism and recreational fishing businesses. Poor water quality limits the ability of a community to grow, may impede industries and businesses, and affects the health of all living things.

Every community that wishes to thrive, keep their existing population in place, and keep their businesses and industries needs to deal with environmental challenges. Communities that wish to grow and expand their population and their employment base must have a sustainable plan; a way to ensure that air, soil, and water quality will be protected and any existing issues will be dealt with properly. Without these assurances, people, industry, businesses, and government will not be able to support the community's plans for growth.

People are becoming more aware of environmental concerns, particularly as they begin to better understand the link between these issues and their health and well-being. Many people are concerned about their future and the future of their children and grandchildren. This activity explores the concerns, causes, and realities of environmental protection and remediation. In doing so, the activity showcases the role of environmental professionals and the type of knowledge and understanding they bring to the everyday challenges faced by communities, corporations, and citizens with respect to environmental protection and clean-up.

BACKGROUND INFORMATION FOR SIMULATION LEADERS

To help you in debriefing and guiding the simulation some of the key issues are outlined here for your reference. There are no right or wrong answers; however there are some key ideas that should be explored by the working groups. This short outline will help illustrate some possible approaches for returning Echo-Vale to a healthy and prosperous community.

COMMUNITIES AND ENVIRONMENTAL CHALLENGES

Around the world the health and well-being of any community depends on its access to safe water, healthy soil, and clean air. The fictional community in this simulation faces a wide range of challenges to cleaning up and keeping its environment safe.

To begin with, Echo-Vale needs to develop long-term business and employment opportunities that are sustainable and environmentally friendly. Existing employment related to tourism, cottagers, boaters, and hikers is in jeopardy. The community needs to clean up its natural areas in order to attract people back to their community. In order to do so, they will need the help of

a wide range of environmental professionals and the cooperation and assistance of government and private industry groups.

Students are not expected to offer specific technical advice on how to address these issues. Rather the focus of the simulation is to prompt students to explore the thinking and cooperative strategies required to meet challenges such as those of Echo-Vale. In addition, the simulation offers them a closer look at a few of the careers in the environmental field.

The following list is a short outline of the issues that must be addressed in the Echo-Vale area. Additional information on Echo-Vale's situation can be found in the scenario at the beginning of the Student's Notes (page 34).

1. **Groundwater Contamination:** The town's old dumpsite is a serious source of contamination and is a threat to the area's groundwater. The soil and groundwater should be tested and any contaminants identified. This will enable the town to take the proper course of action to limit damage to groundwater and begin the clean-up process. For this to happen, the town needs the cooperation of the local government.
2. **Surface Water Contamination:** The old dumpsite needs to be cleaned up and the fact that it is on a hill and may be leaking into the river is a serious problem. Contamination and pollution in the river may be to blame for the decline of fish stocks, which has seriously harmed tourism in the area. The river water will need to be tested to identify the type and source of pollutants and to determine what should be done. Clean-up will be costly and the town will need help and funding from the provincial government and other sources. The townspeople need to be educated about how to dispose of hazardous materials properly and a hazardous waste recycling facility needs to be built. The town should also expand the existing recycling facility and encourage and educate the population and visitors about the importance of managing waste properly.

In addition to the current issues surrounding the old dumpsite, the potential for surface water contamination from the nearby lumber industry must be addressed. The community needs to open dialogue with the lumber operation to be reassured that their environmental protection policy will continue to protect waterways. The town should also examine the community policy concerning erosion along streams and the river embankment to determine the town's impact on the river. For example, if storm water and snowmelt is allowed to flow directly into the river, it may be carrying a lot of contaminants into the water from community streets.

The town should also examine how boaters treat the river because fuel spills, leaks, and garbage dumping from pleasure boats is becoming a serious problem and could dramatically affect the river's water quality. Cottages should also be inspected for leaking septic tanks and waste disposal. The community should consider implementing new by-laws and policies that will make sure boaters, cottage owners, and others using the area's waterways are doing their part to keep the water clean. An environmental policy analyst would be able to help the town develop and implement sound environmental regulations.

3. **Air Quality:** New by-laws and some broad educational programs for the community should be developed in order to help protect air quality. For example, many areas in Canada have idling by-laws that limit the amount of time a vehicle can be left idling. Educating the community and visiting tourists through an information campaign with signs and brochures will raise awareness about what can be done to reduce harmful emissions if everyone were to turn their engines off when vehicles are parked. Leading by example would be a great idea and the community should consider establishing a pedestrian-only zone on the main shopping and dining streets to encourage more people to walk through the area. A screen of trees should also be planted between the community and the highway in order to further reduce the impact of vehicle emissions on the town's air quality.

In addition to addressing air quality issues that are a result of vehicle emissions, the town should also consider monitoring emissions from the stack at the nearby lumber operation. The lumber company's environmental policy already requires frequent testing, but emissions could be further reduced with the installation of scrubbers and other mechanisms to remove hazardous compounds from the air that is released through the stack.

4. **Soil contamination:** Contaminants in the town's soil pose a serious threat to the community's health because these contaminants could potentially end up in surface and groundwater reserves. From a business perspective, development in the town would be very limited if soil conditions were to remain poor. The old dumpsite is the chief cause of the soil contamination and must be cleaned up. Clean soil is vital to this community in order to protect ground and surface water and to ensure that land use is not limited. The health of humans, plants, and animals can all be affected by contaminated soil.
5. **Tourism:** Tourist destinations like Echo-Vale usually prosper when they are pristine and natural, and when there are a number of activities to draw people to the area. This community needs to consider some activities for tourists

that expand the tourism base. Hiking trails, riding trails, and bike rental businesses are all good ideas and environmentally sound. The community also needs to consider ways to keep the area's natural beauty untouched. For example, some townspeople are already concerned about the way clear-cutting may affect the view from the community of the surrounding hillside. If clear-cuts are a problem within sight of the community, the community needs to discuss this with the lumbering operation. It is not uncommon for lumber companies to leave a screen of uncut forested areas to block off clear-cuts from roadways and other vantage points.

INSTRUCTIONS

Teacher's Note: The scenario can be found in the Student's Notes on page 34. The scenario and background information also appear on the ECO Canada website for students to reference at any time. In addition, the Student's Notes also include a short article about each of the roles to provide students with specific role-related information. Students should also use the occupational profiles found on ECO Canada's Student website to research their assigned roles.

The directions in this section provide one way in which the simulation can be used in your classroom. You may adapt it to whatever suits your lesson plans, the time you have available, and the interests and capabilities of your students. You may remove some of the concerns, for example, and focus on just one issue, or you may choose to adapt the scenario to focus on issues that are relevant to your community. The directions are focused on setting up the simulation in one period, then using a 50–90 minute session for the simulation interaction. You may extend the depth of discussion and the involvement of the students to cover several sessions.

This simulation invites dialogue and debate and encourages students to develop skills in negotiation and compromise. Moderating the debate can be a challenge. Be sure to do your own preparation and list the key points you want to see raised in the discussions.

Determine how much time you want to spend on the simulation and adjust your method of running the simulation accordingly. The shortest time feasible is 30 minutes class preparation plus 50 minutes in the simulation setting and a 30–50 minute period as follow-up and debrief. Ideally, the class preparation time is scheduled for a few days before the actual simulation begins. This will allow students time to review, think about the situation, and conduct research into the challenges facing Echo-Vale.

PREPARATION FOR THE SIMULATION (30 MINUTES)

The period before you plan to run the simulation:

1. Give your students the scenario information found in the Student's Notes. Discuss the community's environmental issues and concerns. Consider asking students to read through the scenario and underline the issues they personally feel are the key concerns for the people living in the Echo-Vale area. Discuss the situation from an outside perspective and ask some key questions such as "What do you see as environmental issues, how did they arise, and how are these issues affecting the community?"
2. Show your class the list of organizations and experts that are invited to the next meeting. You may alter this list in any way you wish, or, if time permits, you may ask your students to create their own list. Explain that these organizations and experts are to come to the meeting with an assessment of what they see as the key issues and then work with each other to come to an agreement concerning how to meet these challenges.
3. Ask your students to select an organization or an expert that they will represent or assign everyone a role. If you need to simplify the activity, have everyone play the role of an area resident. Explain to the class that they will need to fully take on the role of the person or organization they select and represent their views and expertise in a working group. The Student's Notes include background information for a number of roles that students might choose to play, including representatives from:
 - The Echo-Vale Resident's Association (at least one representative from this organization should be included in each working group).
 - Enviro-Ed, which is an environmental communications company.
 - The Echo River District Small Business Owner's Association.
 - The Echo River District Watershed Management Authority, which employs water quality experts and hydrologists.
 - The Provincial Ministry of the Environment, representing the departments responsible for water quality, air quality, and parks.
 - Echo Lake Lumber Mills.
 - The municipal engineering department, specifically representatives from both the water department and solid waste management.
 - The media, including an environmental reporter.
4. Create working groups from these representatives. Be sure that each working group has one member representing the resident's association, and if possible one person from the small business association. It is usually helpful to keep the actual working group size to four or fewer students.

5. Ask your students to do some research. Review their classroom notes from previous information you have covered to help them gain some perspective on the issues facing the community. Ask them to do some thinking about the challenges confronting Echo-Vale. Once students have selected or been assigned to a role, ask them to look at these challenges from the point of view of the group or expert they represent. For example, the students playing the role of members of the resident's association should look at the situation from the viewpoint of a member of the community; someone who owns a home in the area, has lived there for many years, and wants to continue living in the community. Encourage students to use the ECO Canada website to search for information about ways in which various environmental professionals work and the types of skills and learning they have at their disposal. For example, if they are from the municipal water services group they should examine the role of a water quality technician. If they are representing Enviro-Ed they should examine the profile of the environmental educator.
6. Select a time for the simulation when you have a period of 50 minutes or more, or when you can run the simulation in a double period with other teachers for whom the simulation may also offer learning benefits.
7. Provide each group with a copy of the Student's Notes for use in the simulation, or post a copy on a transparency and allow the students to copy their parts. Ask them to fill in the challenges in the appropriate column of the Discussion Table (page 46) based on the opinions held by the group or expert they represent. The rest of the form will be filled in as they discuss the situation with the rest of their group during the simulation.

RUNNING THE SIMULATION

1. On the day you run the simulation, break the class into their working groups. Give each group a copy of the Student's Notes (page 34).
2. Assign each of the working groups to one of the stakeholder challenges outlined in the Discussion Guide.
3. Have each working group begin by introducing themselves to their own group, explaining whose viewpoint they represent and stating their opinion on how to best meet the challenges they have been assigned. Remind the students they are to represent the opinions of the role they are playing, not

their own personal views. Students should read the background notes for each of the roles included in the Student's Notes.

4. Once the challenge(s) have been identified by each of the working groups, ask them to develop a plan to meet those challenges. Explain they must all agree on the solution(s) they choose. For example, the person representing one group may want one solution while another group finds it intolerable. The residents may want the old dumpsite cleaned up completely and the municipality may not have the budget. Remind them they need to be advocates for the group they are representing and will need to negotiate solutions.
5. Once groups have agreed on their solutions, they need to discuss and agree on what the outcomes would be if they follow that path. For example, if the challenge is the groundwater and soil contamination related to the old dumpsite and they want to clean up the soil and the groundwater, they will need education to get the message out to ensure people do not continue to bring hazardous materials to the landfill. The municipality will need help funding the work and they will need several experts such as a hydrologist and soil scientist to help determine the extent of the problem and the best way to find a sustainable solution. The Echo Lake Provincial Park representative will want to ensure the river water is cleaned up and kept clean since it empties into the lake and becomes part of their jurisdiction. For this they will need the cooperation of the town council, the residents, businesses, and many others.
6. When the discussion is complete, ask the working groups to report their results. To create an audience for the results, you may choose to use one member of each working group and have them re-form as the Resident's Association. Ask the Resident's Association to listen to all of the proposed solutions or suggestions, keeping in mind their new role as residents. Encourage discussion within the larger group to ensure teams have made reasonable choices and they acknowledge that issues are complex, costly in many cases where clean-up is required, and that it can be reasonably easy to find sustainable solutions that will prevent further issues from arising. Have the Resident's Association group offer their opinions from a resident's point of view on the challenges and the solutions proposed.
7. To take this activity further, consider using additional class periods and have the working groups present their solutions to town council. To accomplish this, have students first negotiate with other working groups and representatives whose help and/or cooperation would be required for their solution. When an agreed upon plan is in place, have the working groups present their solutions

- to the Council and encourage debate and dialogue. You may play the role of the mayor, or bring in others such as teachers or environmental professionals from your community. Consider contacting a local engineering firm, the municipal government, or other organizations that might be interested in participating. If you give them enough notice, many professionals would be pleased to spend an hour or two in your classroom.
8. Consider asking your students to prepare an overall plan for the rehabilitation of the area. Make suggestions for new and more sustainable employment opportunities, for example, constructing cross-country ski trails, building a nature centre, or developing a river tour business.

WRAP - UP

Wrap up the simulation by asking students to explain what they found most interesting about the activity, what new thinking it engendered, and what conclusions they reached. Close the activity by restating that the environment is a part of our everyday life; it influences how we work, our lifestyle, and the sustainability of our communities. Point out that environmental practitioners can be found everywhere and that meeting the challenges of the environment is a fulfilling and satisfying career.

ENRICHMENT:**A REPORTING OPTION**

If it suits the curriculum outcome needs of your classroom, or if you want to pursue the written report potential associated with the simulation, you may choose to have each working group formulate a report they could present to the citizens and council of the community. If you take this approach, the working group can present their report in writing, in the form of a dialogue, or using something more creative such as a news program. The remainder of the class can play the roles of citizens and council members as each working group presents their report. A suggested formula for the reports is shown here, although you can alter it to suit the needs and capabilities of your group.

Framework for the Report

1. What have we identified as the concerns for this community and their order of priority?
2. What can we address in the short term realistically? Remember to take funding, logistics, complexity, and necessary partnerships into consideration.

3. Who should take responsibility for these actions and whose help or cooperation will be needed to ensure the success of the suggested plans?
4. How will we know we have been successful? Remember to provide some information to help the citizens and council understand how you will evaluate the progress and outcomes of your plan.

Teacher's Note: Remember there are no right or wrong answers. Your students do not have to be environmental experts, nor do they have to solve all problems or meet all challenges. The purpose of the activity is simply to build an understanding of the way in which environmental issues overlap and the interrelated nature of environmental challenges. When you examine the Discussion Guide, you will quickly see the groups are focused on identifying the key issues and suggesting practical ways to deal with them. The role-playing simulation is a creative opportunity for students to represent the viewpoints of others in their working group discussions. Discussion and debate are helpful for students to broaden their understanding of the complexity of these issues and the value of cooperation in finding solutions. The notion that cooperation is needed to solve many problems will be a valuable learning component for students.

If time is short, each working group should select only one stakeholder challenge to address. If you want to carry the simulation on, use the first period to address one group's concern and later in the term come back to the simulation and add other stakeholder groups.

You may choose to assign the areas that need to be addressed. There may be more concerns listed than there are students or working groups in your classroom. If this is the case, select the concerns you feel will best suit the skills or knowledge of your students.

You may also choose to edit the scenario description to remove any concerns you would like to take out to simplify the situation or leave some of the challenges to return to later in your term. In addition, you may choose to add an issue relevant to a current local concern.

If you wish to do so, you can have all working groups focus on a single stakeholder viewpoint or select two or three viewpoints to work from. When students have prepared their suggested solutions, have them work in a large group to compare and contrast the solutions. Encourage discussion to bring out the views each person's role represents.

This simulation is a forum for lively debate and negotiation. It will not only offer your students a look at the real world implications of environmental issues, but will also offer them the opportunity to apply their learning and skills to a creative problem solving and planning assignment.

STUDENT'S NOTES: THE ECHO-VALE SCENARIO

Echo-Vale is a small community and has always been considered a safe and beautiful place to live. The drinking water supply comes from deep wells and has historically been safe and pure. There is a river that runs through the community and where it forms a bow there is a nice beach area where people enjoy swimming and rafting. In the past the river area attracted sport-fishing businesses and had several small marinas for pleasure boats.

The chief sources of income in the area are seasonal visitors, cottage owners, sport fishing camps, and fall hunting camps. Many people have holiday homes on the river or lake area just outside Echo-Vale and are vital to the prosperity of local merchants.

Scores of tourists came to this small community to boat and fish and there are many small bed and breakfast businesses in the area. The trails in the nearby hills and woodlands are also popular with hikers and Echo Lake is only a few miles downstream of the town. Echo Lake Provincial Park is a popular camping and picnic destination.

Upstream of Echo-Vale there are a few commercial logging operations that also employ residents of the town. Other residents complain that the logging operations may eventually scar the hills by clear-cutting the slopes. They are also worried about debris from these operations entering the watercourses. To date, water pollution from the lumbering operations has not been an issue and no clear-cutting has been undertaken in areas visible from the community. The logging company also appears to have a solid watercourse protection program, but the community has little confidence in its continuation. They are nervous that as the lumbering operation continues less attention may be paid to the company's internal environmental protection policy. They are also concerned that erosion might occur after slopes have been clear-cut and that soil and sediment may wash down into the river, causing more water quality problems. Although the logging company has said that erosion control is part of their water quality protection policy, the town still has its doubts.

Another source of concern is the local landfill site, which is situated next to the property that was once the town dump. In the past there were no regulations concerning landfills and the old dumpsite was not cleaned up when the new landfill was constructed.

Years ago residents used the old dumpsite to get rid of all kinds of waste, including old household chemicals, pesticides, and paints, which we now know need to be disposed of carefully. Some people still use the old site to dump anything they cannot take to the landfill, such as old batteries, used oil, and herbicide containers. At one time the community also allowed area industries to bury waste barrels of unknown substances at the same dumpsite.

Soil and water sources in and around that area are vulnerable and the community is concerned about the potential effects of these pollutants. The new landfill site has a clay liner and leachate (the liquid that collects under landfill sites as precipitation percolates down through the garbage), which is carefully managed. The old dumpsite, however, is located on a hill above the river and there is concern that many of the hazardous substances in the old dump have leaked into the river over the past few years.

Water quality in the river has been getting noticeably poorer over time. Fish stocks are much lower than levels recorded just ten years ago. Many people feel the problems are caused not only by the dump's contaminants, but also by gasoline and motor oil from the marinas that have seeped into the water. Other residents feel water quality is primarily affected by run-off from the town's streets because storm drains in the downtown area empty directly into the river. In reality all of these situations are contributing to the poor water quality in the river, and many are affecting the soil as well. And if contaminants are getting into the soil, residents are concerned they could end up in groundwater too, which could destroy the town's source of drinking water.

Because the community is situated in a valley, air quality can be poor at times, particularly in the summer months. A main highway passes very close to the community and traffic in summer is very heavy. Pleasure boat exhaust, local trucks and cars, highway traffic, snowmobiles in winter, and recreational vehicles create a haze that seems to hang in the valley air. Residents are also looking for ways to improve air quality.

An environmental reporter for the local media has recently published a series of articles detailing poor environmental conditions in the community. In response, the town's council released a statement saying there is no money available to clean up the environment. They say that without more businesses and a better tax base they cannot address these issues.

Tourism has also fallen to an all time low: fewer game fish in the river has reduced the sport fishing industry to just one camp from the three that used to operate. Now few local residents or visitors use the river for boating or swimming and there is only one small marina still in operation. Cottage properties are boarded up and some have been for sale for months without any offers because there are no buyers who want to live or vacation in Echo-Vale. Hikers still visit but do not stay long because there are no other activities to attract them to the community. The motels and the bed and breakfasts are losing customers every year.

Echo-Vale is not what it used to be and certainly not what it could be. At a recent town hall meeting, citizens demanded answers. According to town council and the mayor, none were available. The challenge is clear: how can Echo-Vale return to prosperity and clean up their environmental problems?

A group of citizens decided to form a resident's association. At their first meeting they drew up a list of professionals and associations they think may help them meet this challenge. They have invited these groups to present them with some ideas.

ROLE-PLAY NOTES

The background notes below provide information for the roles involved in the Echo-Vale discussions. They outline the opinions, priorities, and expertise of the different groups. For more information on environmental occupations, visit ECO Canada's Student website at www.eco.ca/careers.

RESIDENT'S ASSOCIATION

You represent the resident's association. The community is important to you; it is where you have always lived and you want to remain in the community in the future, but you are concerned about the quality of life in Echo-Vale. You know the water quality is in jeopardy and that air quality is poor. You are worried about the long-term health of those living here and about the way the community will shrink if jobs are lost and tourism declines.

As a resident, you know the resources of the community are limited, both financially and from the point of view of knowledge and expertise. In other words, you know there is little money to fix the problems and not enough know-how to find solutions.

You believe it is vital to the community's future and your own to ensure water quality in the river is improved, new environmentally-sustainable business opportunities are developed, and historic problems such as the town's old dumpsite are cleaned up.

You are open to new ideas but are concerned about costs. Remember, you want to make this place your home for many years to come and so you would be willing to accept higher taxes or some other form of financial burden to help pay for cleaning up your community.

As a resident you will have to balance the importance of employment with concerns about the impacts of industries such as the nearby lumber operation. You want companies to be proactive in protecting the environment, but you also need think about the fact that higher costs for these companies may mean that Echo-Vale is not as attractive as other locations.

Do some research on-line or at the school library into clean-up efforts and environmental impacts in small communities to help prepare yourself to play the role of an Echo-Vale resident. Think about the issues the scenario outlines and put yourself in the shoes of a person living and working in this community.

Remember you are not required to develop any elaborate plans in the discussion. It is more important that you represent the position of a resident to others in your working group and ensure they consider the long term viability of any solutions they come up with. Your role is to be the voice of the people who have to live in the community and have a key stake in the success of any initiative.

ENVIRO-ED REPRESENTATIVE

You work for Enviro-Ed, which is an environmental education and communications company. You know the best way to protect the environment in the future is to educate and inform people about the consequences of their actions and persuade them to do things differently. For example, you know that if you tell people to use their cars less often and make shorter trips on a bicycle, you will not get much cooperation. If you tell people why they need to use their cars less often and how this will improve air quality and health issues, you will likely see a lot more cooperation.

As an environmental educator, you understand that many people don't realize the impact their everyday activities can have. Getting people to take action by recycling, reducing the amount of waste they generate, and avoiding activities that cause harmful levels of pollution is easier when people know more about how their efforts can benefit themselves and their community. You believe it is important to educate children about the environment and you know they will help educate their parents. It is critical to the success of any education program that people understand why they should make a change, how to make that change, and the benefits that will come from this change.

As the education expert, you will likely recommend a series of educational efforts to accompany the decisions made for Echo-Vale. You will want people to know about the environment and how small changes can add up to big impacts. You will try to persuade others of the importance of education and information in Echo-Vale.

For the long-term sustainability of the community, you may suggest some or all of the following, as well as ideas of your own:

- Education to help people understand that groundwater and soil contamination can result from dumping hazardous wastes and garbage in places where they cannot be disposed of properly.
- Education and information about ways to recycle more than just newsprint, glass and cans. Use of clothing exchanges, plastics recycling, composting, and other methods of keeping waste out of landfills will be on your agenda. You will want people to know the importance of reducing their garbage to make the landfill site last longer.
- Education to teach people the benefits of reusing material and choosing recycled products, including lower manufacturing costs in terms of the natural resources required and the amount of energy used to produce consumer goods.

As part of the solution, you may have to explain the importance of education in influencing people to pay for the clean-up that may be required in this community. The entire community will have to be more aware of the short and long-term impacts of poor water and air quality, and the ways in which cleaning up areas like the old dump site will benefit them now and in the future.

Do some research on the role of environmental educators. Go to ECO Canada's website to look at the occupational profile of an environmental educator. Visit the school library or conduct an on-line search for environmental education information.

Remember you are not required to develop any elaborate plans in the discussion. It is more important that you represent the position of an environmental educator to others in your working group and ensure they consider education and information in the community as an important part of the plan's success.

ECHO-VALE SMALL BUSINESS ASSOCIATION

You are a member of the local small business association. You have seen many small businesses close over the past ten years and you can't see things getting better anytime soon. Your association is aware that river water quality is poor and that something needs to be done to get tourists back to the area and have them stay longer and spend more money. You are also aware that jobs are critical and new businesses that complement the tourist trade will bring more money into the community.

Your association members own businesses that include a hardware store, grocery store, pharmacy, convenience store, bed and breakfasts, motels, restaurants, boat rental and repair shop, biking and hiking outfitters, and other small service and retail operations. Your members

employ townspeople and their businesses service local residents and seasonal tourists. The businesses need local people to spend money in their shops and on their services, as well as visiting tourists to supplement their income. You will be looking for ideas that serve your association members well.

Your small business association is willing to listen to new ideas and take an active role in getting the community back on track. You have agreed to spend money on this if the solutions and action plans make good business sense.

As a business community representative, you may want to offer some ideas for new businesses in the area, such as canoe rentals, hiking and nature trail guiding, new sport fishing camps, or a charter boat business. Come up with some ideas of your own by reading carefully through the scenario and thinking about the kinds of businesses that might encourage more tourists to come to Echo-Vale and spend their vacations in the community.

Do some research on the tourism industry in your area by going to your province's website and looking at the types of activities that are showcased to attract tourists. Also use the ECO Canada Student site and take a look at the occupational profile for an ecotourism operator. Ask your librarian for help finding out more about small businesses and how they are impacted by environmental concerns such as poor water quality or polluted soil.

Remember you are not required to develop any elaborate plans in the discussion. It is more important that you represent the position of a small business owner to others in your working group and ensure they consider the impact of their decisions on the small business community and its future.

ECHO RIVER DISTRICT WATERSHED MANAGEMENT AUTHORITY

Your organization is funded by the province and is in place to help protect the Echo River watershed. You monitor water quality, educate people about preventing surface and groundwater from contamination, and work to protect the many species of plants and animals that make their home along the watershed's rivers and streams and in its wetlands and marshes.

You know the old town dumpsite is leaking toxic substances into the river because you have tested the soil in the area and supervised the drilling of test wells to check groundwater quality, all of which have shown contamination. Your organization wanted to start the clean-up process many years ago but community leaders were not interested and felt the clean-up was too expensive and largely unnecessary.

As water quality specialists, your organization's representatives will want to promote the clean-up of the old dumpsite as an important step in increasing the quality of the river's water. You

will also want to promote education for the marina customers and boaters to keep fuel and oil out of the water.

Your organization has seen a lot of evidence of garbage dumping in the river, possibly from boaters, and you know steps need to be taken to eliminate dumping and protect water quality and aquatic ecosystems. You are also concerned that road salt, pesticides, and herbicides are being washed into the river with rainfall and snowmelt. This is contributing to poor water quality and you need to let others know that this is a danger to fish and other aquatic species.

Your organization will be happy to work with the lumber company and the town to ensure waterways near the logging operation are well protected in the future.

You may also want to suggest expanding the town's tourist appeal by offering marsh walks and bird watching opportunities. Your organization used to offer these programs, but they were lost to budget cuts. Consider partnering with local eco-tourism operations whereby they are granted permission to use your facilities if they pay for staff and upkeep of the sites. Do some research into the role of watershed management by accessing your library or conducting an on-line search for similar organizations in your area. Visit the ECO Canada website and search the occupational profiles for water quality technicians, hydrologists, limnologists, and other water professionals to find out more about their roles in protecting water resources.

Remember you are not required to develop any elaborate plans in the discussion. It is more important that you represent the position of the Echo River District Watershed Management Authority to others in your working group and ensure they consider the impact of any action they take on the health of the watershed and its ecosystem.

PROVINCIAL MINISTRY OF THE ENVIRONMENT-
WATER QUALITY DEPARTMENT

You work for the province and your role is to protect water quality. You know this area has some pollution issues that are affecting the river. You want to help the community find solutions that will clean up historical sources of pollution such as the old dumpsite and put in place strong measures to help prevent future problems from arising. Your organization is willing to work in an advisory capacity, but budget constraints prevent you from being involved in long-term efforts.

If the community can take some steps to prevent water quality problems in the future, you may be able to help them apply for grants to clean up the old dumpsite. You also want the community to take action to prevent run-off from pesticides, herbicides, and road salt from getting into the river water.

Do some research on your province's website to find more information on water quality protection plans in your area. Go to the ECO Canada Student website and read the occupational profiles for water quality technicians, hydrologists, limnologists, and other water professionals to find out more about the views and actions you should take.

Remember you are not required to develop any elaborate plans in the discussion. It is more important that you represent the position of the provincial government to others in your working group and ensure they understand the dumpsite clean-up is crucial to protecting water quality. You should also tell your group they may qualify for grants to help pay for some of the work, and they need to make long-term plans to ensure the river and groundwater is protected in the future.

PROVINCIAL MINISTRY OF THE ENVIRONMENT-
AIR QUALITY DEPARTMENT

You are from the air quality branch of the provincial government. Your role is to make certain people in the working group understand the community and visiting tourists are contributing to their own air pollution problems. You will want to see plans to educate people about reducing the number of times they use their cars in an effort to reduce vehicular emissions. Implementing a summer shuttle bus may be an option you can raise. You may also want to support car-pooling and bike-to-work initiatives to help reduce air emissions.

Your ministry can help with educational materials and other ideas to help reduce air pollution. Your organization has already partnered with the lumber operation to implement a five minute idling policy to reduce emissions from logging trucks and vehicles. You may also want to suggest planting a belt of trees along the highway to help minimize the impact of highway traffic emissions.

Your organization cannot be involved in the day to day work in Echo-Vale due to budget constraints, but you are willing to act as a long-term advisor and provide support and information for community efforts.

Do some research on-line to find more information on steps that can be taken to reduce air pollution. Go to the ECO Canada Student website and read the occupational profiles for air quality technicians, engineers, and specialists to find out more about the views and actions you should take.

Remember you are not required to develop any elaborate plans in the discussion. It is more important that you represent the position of the provincial government to others in your working group and ensure they understand the need for education and policies to protect Echo-Vale's air quality.

PROVINCIAL PARKS DEPARTMENT

You are from the Provincial Parks department. Since Echo Lake is filled by Echo River, you have a stake in cleaning up the river water. Your organization does not have sufficient funds to allow you to take an active role in the community's clean-up effort, but you can help them with advice and information. You can also help by ensuring boaters launching in the park or using park facilities are informed of the importance of keeping the water clean.

You need to examine the town's plans for cleaning up the river from the point of view of how their actions will impact the lake and Echo Lake Provincial Park.

Do some research on your province's website to find more information on provincial parks and their role in conservation and protection. Go to the ECO Canada Student website and read the occupational profiles for park warden, conservation officer, and environmental enforcement officer to find out more about the views and actions you should take.

Remember you are not required to develop any elaborate plans in the discussion. It is more important that you represent the position of the provincial government to others in your working group and ensure they understand how river water quality affects Echo Lake and Echo Lake Provincial Park. Let your group know your organization will offer information and share education materials with the community, and that they need to make long-term plans to ensure that the river water quality is protected.

ECHO LAKE LUMBER MILLS

You are employed by Echo Lake Lumber and your role is to train staff about environmental impacts. You know the company is concerned about making certain its operation is viable and sustainable. You also know the cost of taking steps to protect the environment is minor when compared to the costs of fines and losing the public's trust should your company be found guilty of damaging the environment. Your company wants to be a good corporate citizen and do their part to protect the environment as much as possible.

Your role is to represent the concerns of the company and to offer whatever help you can to the community in order to expand its tourist trade. You are aware that people are often more eager to blame others than to accept their own responsibility for environmental damage. Be prepared that some people in the group may feel that air and water quality are more threatened by your company than by any other source. Your company has worked closely with the provincial Ministry of the Environment and you have a good record in terms of water quality. You have also taken steps to protect air quality by limiting the amount of time a vehicle idles on your properties as a means to reduce vehicular emissions.

Your company will want to be co-operative and help educate others. You may even contribute other efforts such as keeping a screen of forested area between the community and any areas you may harvest via clear-cutting. If the idea is raised to plant trees to act as a buffer between the community and the highway, you may even volunteer to help the project by loaning equipment and donating small trees.

Do some research on the forestry and logging industry to find more information on their efforts to protect and conserve the environment. Go to the ECO Canada Student website and read the occupational profiles for forester, forestry technician, and arborist to find out more about the views and actions you should take.

Remember you are not required to develop any elaborate plans in the discussion. It is more important that you represent the position of Echo Lake Lumber to others in your working group and ensure they understand your company's commitment to environmental protection and cooperation with the community's initiatives. Keep in mind you represent a big and profitable company and you value the goodwill of the community, your workers, and the various levels of government.

MUNICIPAL ENGINEERING DEPARTMENT- WATER SERVICES

You are an engineer and your role for the municipality is to protect water quality in the wells that supply drinking water. You have long been concerned that the old dumpsite needs to be cleaned up before contaminants leach into the groundwater, but there is a significant cost for the clean-up and so far no civic budgets have included this work. You are also concerned about the use of salt on roads and walkways downtown because you know this is getting washed into the river and contaminating the water.

Groundwater supplies the town's drinking water, and the big municipal wells all get water from one large aquifer. This water resource is recharged or refilled through snowmelt and rainfall falling on open unpaved areas of land above the aquifer. You want to make certain this land area is protected and the use of herbicides, pesticides, fertilizers, road salt, and other potential groundwater contaminants are limited and controlled in this area.

Your department can assist the community with the clean-up, but Town Council will have to expand their budget to fund the project.

Remember you are not required to develop any elaborate plans in the discussion. It is more important that you represent the position of the municipal government to others in your working group and ensure they understand that the river and groundwater need to be protected for the future and the historical sources of contamination cleaned up.

MUNICIPAL ENGINEERING DEPARTMENT- SOLID WASTE MANAGEMENT

You are a member of the solid waste management staff. You would like to expand the kinds of materials accepted by the town's recycling program and hope this working group will suggest expanding the recycling budget. If the recycling program does not expand soon, you are worried the new landfill will fill up within the next 15 years. By increasing the recycling options for residents, you can decrease the amount of garbage going to the landfill.

You also want Town Council to provide money to start a hazardous waste program so people can have a local spot to take hazardous materials quickly and easily. You feel this will help eliminate the illegal dumping that has been going on at the old dumpsite.

You know the new landfill site is properly engineered, but you are worried the contaminants from the old dumpsite will contaminate soil, groundwater, and river water. Your internal team has some expertise to offer municipal engineers, but your department's current budget cannot fund any of the work. Your department is eager to help the community and is willing to offer education, information, and ideas.

Do some research into waste management issues on-line, including your own municipality's protocols for handling solid waste. Your librarian may be able to help you find out more about recycling in general to help you get a better feel for the role your character will want to play. Go to the ECO Canada Student website and read the occupational profiles for landfill engineer and waste management specialist to find out more about the views and actions you should take.

Remember you are not required to develop any elaborate plans in the discussion. It is more important that you represent the position of the municipal government to others in your working group and ensure they consider the support, assistance, and ideas your department can provide to help make the community more environmentally sustainable in the way they handle their solid waste.

INVESTIGATIVE REPORTER

You are a journalist and you work for the local newspaper. You like this community and you want to see it grow and prosper. You spent a lot of time and energy researching the situation and your article about the environmental problems in Echo-Vale has really raised awareness among residents. Your role is to gather news and in this discussion group you will want to represent the media not only as a journalist, but also as a concerned citizen.

Your newspaper can help educate and inform the community by adding an environmental or lifestyles section that can be used to pass on advice and suggestions from environmental experts.

You will want to think like a journalist and actively participate in the discussion. You will ask the kinds of questions that will lead to more articles for your paper. Be sure to do a little research into the key environmental issues facing this community so you will be able to present the viewpoint of the media in your working group. Go to the ECO Canada Student website and read the occupational profile for an environmental reporter to find out more about the views and actions you should take.

DISCUSSION GUIDE

Stakeholders are groups with a stake in the outcome of your discussion. If you can add to the stakeholders list, please add other groups in the space provided.

Your group will be assigned to one of the stakeholders from the Discussion Table. Begin by listing all the environmental challenges you feel are faced by your stakeholder group. List them in their order of importance. You may have to negotiate that order within your group. Some people may feel one challenge is more important than another. Sorting this out will take some discussion.

Remember that all the members of your group are representing the views of others. Some are representing area residents, some the views of various environmental professionals, and some represent businesses, parks, and governments. This does not mean that you have to come up with complex professional suggestions for change, only that each person in your working group needs to think about the issues and challenges from the point of view of the role they are playing. For example, if you represent Echo Lake Provincial Park, you are likely to think the most important issue is lake water quality. If you are representing an area resident, lake water may not be your top priority. Your suggestions for change should be based on what you think are reasonable ways to meet the challenge from the perspective of your assigned role.

DISCUSSION TABLE

STAKEHOLDERS	CHALLENGES FACED	SUGGESTIONS FOR CHANGE	OUTCOMES What results do you expect from the change you've suggested?	PARTNERS Whose help or cooperation is needed to make it happen?	SUSTAINABILITY How can you prevent further problems and is the suggested change sustainable?
AREA RESIDENTS					
AREA BUSINESS OWNERS					
LUMBER OPERATION					
PROVINCIAL GOVERNMENT					
LOCAL MUNICIPAL GOVERNMENT					
OTHERS					

RESOURCES

This section contains key resources for students and teachers. The activities in this manual are designed with links to existing curriculum in mind. The potential curriculum links for these activities are shown by province.

This section also contains a list of the occupational profiles that can be found on the ECO Canada Student website at www.eco.ca, as well as the Web of Life diagram for use in classroom presentations. You will also find a map of the simulation community of Echo-Vale, which may help students identify the key issues facing the community. If you plan to use the simulation over several periods, consider enlarging the map and posting it in the classroom.

CURRICULUM LINKS

ACTIVITIES:

CAREER FOCUS**Alberta**

Career Focus

- Students will develop and apply processes for managing personal, lifelong career development.

British Columbia

Career Development: Career Skills Awareness

Grade 10:

- Apply research skills to identify the various types of work with career clusters.

Grades 11 and 12:

- Assess their transferable skills and relate them to occupational and lifestyle choices.
- Apply research skills to acquire information related to job possibilities and career interests.

Career Development: Career Exploration

Grade 10:

- Identify and investigate educational routes and experiences necessary to achieve their goals.
- Research career opportunities in local, regional, and global workplaces.
- Describe the impact on the labour market of changes taking place in society, the economy, and the environment.

Grades 11 and 12:

- Identify possible career paths involving post-secondary training or education.
- Analyze changes taking place in the economy, environment, and society as they relate to current labour market information.
- Evaluate the contributions to society of the various types of work.
- Access and use services and resources to carry out their plans.

Newfoundland and Labrador

Career Education

- To develop an understanding of the nature and structure of work and understand that both of these change as societal needs fluctuate.
- To develop skills that enable students to research, plan, implement, monitor, and evaluate decisions.
- To develop an understanding of and an appreciation for the relevance of education and achievement to career development.

Northwest Territories

Career Development Model

- Sees individuals as capable of contributing to community and society.
- Able to identify own values, interests, beliefs, attitudes, and personal characteristics.
- Gathers a range of information and effectively uses it to identify opportunities for learning, working, and making positive community contributions.
- Recognizes requirements (skills, knowledge, attitudes, education, and experience) for various work/life roles.

Ontario

Designing Your Future: Grade 11 GWL 30

- Identify fields of work, jobs, and self-employment opportunities that are growing as a result of identified trends.

Québec

Global Objective: “While integrating certain important aspects of vocational development into the psycho-educational process by which the student learns to make choices, this program aims to enable him to make intelligent educational and vocational choices that are congruent with respect to himself, and realistic with respect to the labour market, with the ultimate purpose being self-realization.”

Specific goals for each year:

- Secondary 1 and 2- Explore the various components of his personal identity and the various aspects of his academic and occupational environment in order to further his vocational development.

- Secondary 3- Crystallize in the formulation of a general orientation the multiple elements of knowledge discovered during the exploration phase.
- Secondary 4- Specify his vocational preferences and to make plans that take into account what he wants and what he can do.

Saskatchewan

Career and Work Exploration 10, 20, A30, B30

Module 18: Career Decisions (Core)

Locate and use career and work information effectively.

- 18.2- Understand how interests, abilities, and aptitudes affect career and work choices and opportunities.
- 18.3- To understand the relationship among occupational choices, lifestyle, and education or training requirements.
- 18.4- To explore working conditions related to lifestyle, roles, and occupational choices.

ACTIVITIES:

THE SIMULATION

Atlantic Canada

Foundations for Science Curriculum

- Demonstrate understanding of sustainable development and its implications for the environment.
- Access, process, share, and evaluate information.
- Critically reflect on and interpret ideas presented through a variety of media.
- Discriminate among a wide variety of career opportunities.
- Work and study purposefully both independently and in groups.
- Acquire processes and interpret information critically to make informed decisions.
- Solve problems individually and collaboratively.
- Students will develop an understanding of the nature of science and technology, of the relationships between science and technology, and of the social and environmental contexts of science and technology.
- Students will be encouraged to develop attitudes that support the responsible acquisition and application of scientific and technical knowledge to the mutual benefit of self, society, and the environment.

British Columbia

Environment and Resources

Module 6: Pollution

- Describe the effects and possible solutions to various sources of pollution.
- Outline the detrimental effects of pollutants on society.
- Identify undesirable and unexpected by-products and relate them to specific technologies.
- Relate individual and community responsibilities to societal waste problems.
- Apply decision-making models to the management and use of resources.

Technical and Professional Communications 12

Collaborate and consult effectively with others in completing communications tasks through means that include:

- Interacting confidently.
- Assuming responsibility for their roles in teams.
- Respecting and promoting respect for the contributions of other team members.
- Demonstrating a commitment to the teams and to project goals.
- Effective listening and speaking.

Manitoba

SLO B1

- Describe scientific and technological developments, past and present, and appreciate their impact on individuals, societies, and environment, both locally and globally.

SLO B4

- Demonstrate knowledge of and a personal consideration for a range of possible science and technology related interests, hobbies, and careers.

SLO B5

- Identify and demonstrate actions that promote a sustainable environment, society, and economy, both locally and globally.

Northwest Territories

IOP Senior High

Science

- Develop critical and creative thinking skills and apply these skills to a variety of practical situations through processes of scientific inquiry, problem solving, and decision making.
- Develop communications skills that are used when gathering, interpreting, and applying scientific knowledge.

Science Technology and Societal Issues

Understanding that:

- Science and technology have an impact on our lifestyle, occupational choice, environment, and welfare.
- Economic, political, and ethical perspectives often interact with science and technology and exert significant influence on each.
- Compromises are often needed in order to arrive at workable solutions involving science and technology in society.

Science 16: Understanding Our Environment

Student will be expected to:

- Appreciate the fragility of the biosphere.

Nunavut

High School

Environmental Studies

- Understand and identify the various categories of environmental pollutants/hazards that affect Northern ecosystems, air, soil, and water.
- Understand the principles of waste management and their bio-sustainable alternatives.
- Understand the need for toxic waste management.
- Understand the sources and effects of airborne pollutants.
- Be aware of career opportunities associated with Environmental Studies.

Ontario

The Environment and Resource Management

CGR4M

- Describe the effects of human activities on various aspects of the environment.
- Describe the importance of using sustainable practices in resource-based industries.
- Explain significant short and long-term effects of human activity on the natural environment.
- Analyze and evaluate interrelationships among the environment, the economy, and society.
- Evaluate a variety of approaches to resolving environmental and resource management concerns on a local, regional, and national scale.
- Assess the effect of human activities on urban and regional ecosystems and propose solutions to urban environmental problems.
- Explain the ways in which people and other living organisms are dependent on the natural environment.
- Explain the rights and responsibilities of citizens with respect to the environment and responsible and sustainable resource management.

Environmental Science

Biology: Grade 11 SB13C

- Demonstrate an understanding of the factors that influence the sustainability of the natural environment and evaluate their importance.
- Explain why it is important to be aware of the impact of human activities on the natural environment.

Human Impact on the Environment

Grades 11 and 12 Science

- Demonstrate an understanding of the impact of humans on the environment and assess alternative courses of action.
- Analyze some of the environmental, technological, and social factors that affect the sustainability of the human population on earth.

Québec:

General Biology

- Develop a gradual understanding of the concept of balance in nature by studying certain regulating mechanisms so that once the students have examined various issues which threaten their quality of life, they can make sound decisions and take appropriate action.
- Develop certain skills and attitudes, and acquire knowledge of living things and of the balance in nature by examining current problems and issues.
- Develop certain skills by discovering and exploring topics related to life and the balance in nature.

Saskatchewan

Biology 20 - Unit 2

- 2.3- Describe how the human community is dependent on the soil, water, and air.

Grade 10 Science: Water Quality

- Value water as an important renewable resource.
- Explain some of the ways in which water pollution threatens aquatic life.
- Discuss how water contamination affects human life and activity.
- Debate an issue related to water quality in the local region.

OCCUPATIONAL PROFILES

The following is a complete list of occupational profiles that can be found on ECO Canada's Student website. To access the occupational profiles, career matching tool, video library, and career information centre, students must sign in at www.eco.ca/careers.

- Agriculture Engineer
- Agriculture Specialist
- Agriculture Technician/Technologist
- Agrologist
- Agronomist
- Air Quality Engineer
- Air Quality Specialist
- Air Quality Technician/Technologist
- Analytical Chemist
- Aquaculture Support Worker
- Aquaculturist
- Arborist
- Avalanche Forecaster
- Biochemist
- Biological Technician
- Biometrician
- Biotechnologist
- Botanist
- Cartographer
- Chemical Technician/Technologist
- Climatologist
- Compliance Promotion Specialist
- Conservation Biologist
- Conservation Officer
- Crop and Livestock Producer
- Ecologist
- Ecotourism Operator
- Ecotoxicologist
- Emergency Manager
- Emerging Energy Researcher
- Energy Auditor
- Entomologist
- Environmental Assessment Analyst
- Environmental Auditor
- Environmental Chemist
- Environmental Communications Officer
- Environmental Economist
- Environmental Educator
- Environmental Enforcement Officer
- Environmental Engineer

- Environmental Epidemiologist
- Environmental Geologist
- Environmental Geophysicist
- Environmental Health Officer
- Environmental Lawyer
- Environmental Manager
- Environmental Monitoring Technician
- Environmental Planner
- Environmental Policy Analyst
- Environmental Psychologist
- Environmental Reporter
- Environmental Technical Salesperson
- Environmental Technician/Technologist
- Environmental Training Specialist
- Fisheries Technician/Technologist
- Forester
- Forestry Technician/Technologist
- Geographer
- Geological and Geophysical Technician/Technologist
- Geomatics Technician/Technologist
- GIS Analyst
- Glaciologist
- Hazardous Materials Specialist
- Hazardous Waste Technician
- Horticulturalist
- Hydrologist
- Industrial Designer
- Industrial Waste Inspector
- Laboratory Assessor
- Landfill Engineer
- Landscape Architect
- Limnologist
- Marine Biologist
- Meteorologist
- Microbiologist
- Naturalist
- Occupational Hygienist
- Oceanographer
- Ornithologist
- Park Interpreter
- Park Warden
- Pollution Control Technologist
- Process Engineer
- Reclamation Specialist
- Recycling Coordinator
- Remediation Specialist
- Seismologist

- Soil Conservationist
- Soil Scientist
- Sustainable Architect
- Sustainable Interior Designer
- Waste Management Specialist
- Wastewater Collection and Treatment Operator
- Water and Wastewater Plant Engineer
- Water Quality Technician/Technologist
- Waster Treatment and Distribution Operator
- Wildlife Biologist
- Wildlife Technician/Technologist
- Wind Energy Developer
- Zoologist

WEBSITES

ALBERTA LEARNING INFORMATION SERVICE
www.alis.gov.ab.ca

BC WORKINFONET
www.workinfonet.bc.ca

CANADIAN CAREER CONSORTIUM
www.careerccc.org

CANADIAN NETWORK FOR ENVIRONMENTAL EDUCATION AND COMMUNICATION
www.eecom.org

CAREER CRUISING
www.careercruising.com

ENVIRONMENT CANADA'S YOUTH PORTAL
www.on.ec.gc.ca/community/youth

GREEN PAGES
www.thegreenpages.ca

INFOPEI
www.gov.pe.ca/infopei

JOB FUTURES
www.jobfutures.ca

MANITOBA WORKINFONET
www.mb.workinfonet.ca

NEW BRUNSWICK CAREER DEVELOPMENT ACTION GROUP
www.nbcdag-gadcnb.ca

NEWFOUNDLAND AND LABRADOR WORKINFONET
www.gov.nf.ca/nlwin

NORTHWIN- NORTHWEST TERRITORIES WORKINFONET
www.northwin.ca

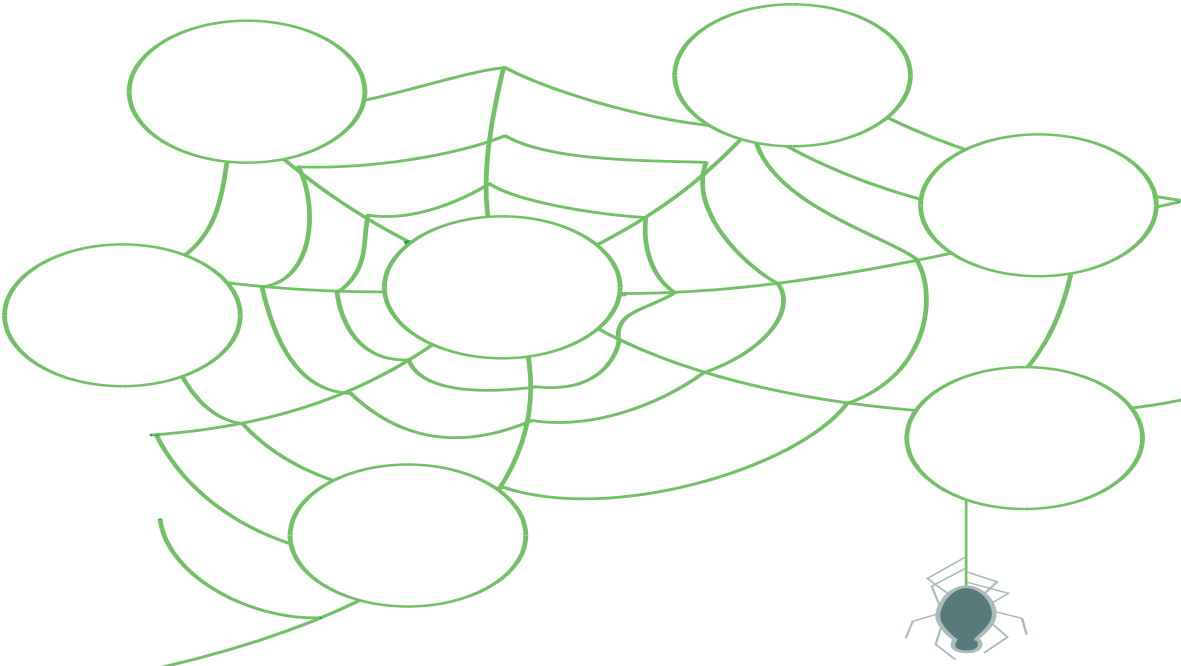
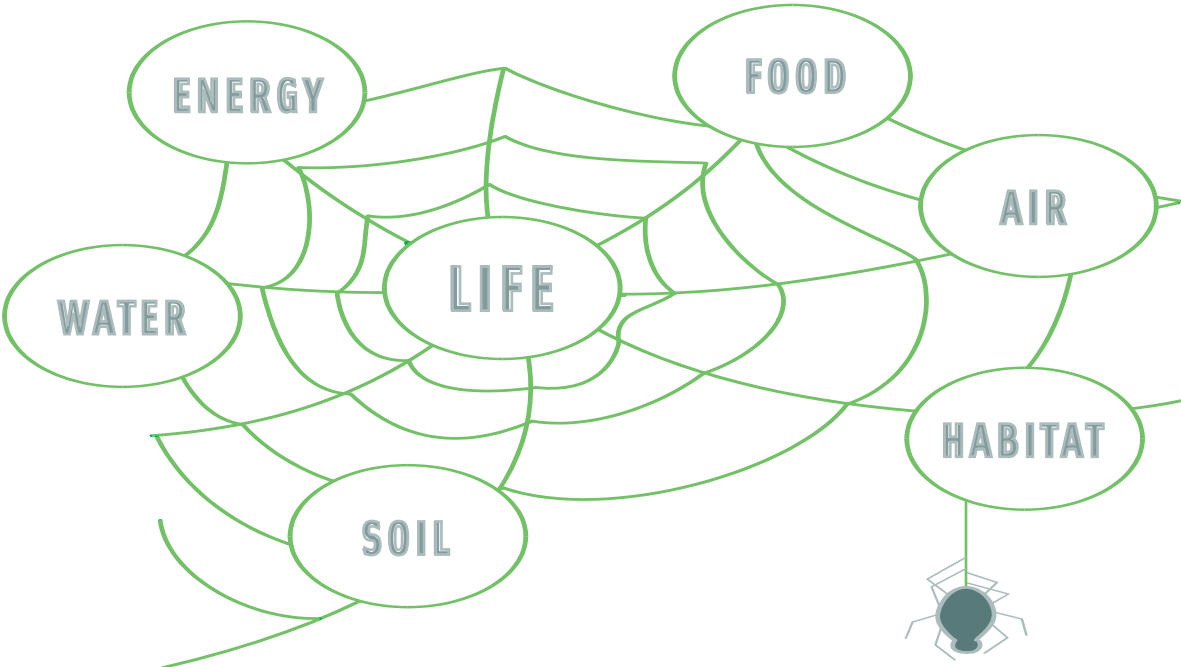
NOVA SCOTIA WORKINFONET
www.workinfonet.ednet.ns.ca

ONWIN- ONTARIO WORKINFONET
www.onwin.ca

SASKNETWORK
www.sasknetwork.gov.sk.ca

YUWIN- YUKON WORKINFONET
www.yuwin.ca

WEB OF LIFE



MAP OF ECHO-VALE

