Interacting in communities: Unit 8 SCIENCE, TECHNOLOGY, & ENVIRONMENT



ELSA 6 CLB 7

Introduction

In this unit learners will embed the topics of science, technology, and the environment into their own personal, cultural, and social contexts and experiences. This unit engages learners in considering science-related issues in everyday life and encourages them to make responsible choices about these issues. Rather than adopting a specialist disposition, instructors are encouraged to join their learners in exploring how these topics relate to real peoples' lives and environments. Instructors should have no fear of saying, "I don't know. Let's find out!."

The **Core Curriculum** focuses on learners' ecological footprints, how household objects are invented and produced, and big-picture science questions such as the origins of the universe and life on Earth.

The optional **Project** component focuses on the production of a short instructional video describing how to perform a particular science, technology, or environmental task or procedure. Learners collaborate to produce the video, which culminates in a class presentation and screening.

Teaching Suggestions

- Plan a field trip to a science fair, ecology centre, or technology museum.
- Invite a guest speaker from an environmental organization, such as the Sierra Club of BC or the Western Canada Wilderness Committee.
- Ask learners to compare and contrast articles that express opposing points of view on topics.
- Encourage learners to ask questions about texts and answer their own questions to build study skills.
- Encourage learners to give each other feedback on class assignments.
- Research communication styles that contribute to effective teams.

Target OUTCOMES

CLB Outcomes

The following are the mandatory outcomes to be covered in this unit:

Listening	
	Understand moderately complex directions and instructions for technical or non-technical tasks.
Speaking	
€ ∈ CLB 7-II:	Give instructions and directions for technical and non- technical tasks, procedures and processes.
€ CLB 7-III:	Give extended warnings, suggestions, recommendations or advice.
Reading	
😴 CLB 7-II:	Understand moderately complex instructions and instructional texts for multistep procedures related to familiar tasks, which may be specialized or technical.
Writing	
⊯ CLB 7-II:	Reduce short oral discourse (such as live or recoded phone messages, pre-recorded public information, podcasts or short presentations) to notes.

Content and Other Outcomes

Learners will

- have the opportunity to expand their scientific, technological, and environmental literacy
- read and listen to written and aural texts intensively to understand key science, technology, and environmental concepts
- consider critical perspectives on environmental, scientific, and technological claims
- collaborate to produce an instructional video on a science, technology, or environmental issue
- develop skills appropriate to their role in the project: some, but not all of script writing, production planning, acting, narrating, video-taping, producing

POSSIBLE TOPICS

Торіс	This unit introduces learners to science, technology, and the environment as these things affect the day-to-day life of Canadians. The unit is intended to develop scientific and environmental literacy and citizenship. The focus is on developing the kinds of reasoning and information about science, technology, and the environment required to live as an active, informed and healthy citizen in contemporary Canada. Possible topics include critical thinking, information sources, and behaviours required to function as effective consumers of scientific, technological, or environmental information and services.
Cross-cultural Perspectives	 Attitudes toward science, technology, and the environment vary from country to country. Topics might include comparing and contrasting Canada and learners' countries of origin with respect to the following: access to, or use of, technology (e.g., cellphones vs. land phones the internet, computers) population, consumption and per capita ecological footprints food consumption, households, and lifestyles energy consumption and sources comparing and contrasting scientific thinking and evidence with other forms of belief or reasoning economic development and quality of life: quantity vs. quality of life (e.g., GNP vs. human development index) Bhutan's approach to Gross National Happiness (vs. the GNP) characteristics of a high quality of life (see the HDI)
Systems and Practices in BC and Canada	 The following are possible topics instructors could explore with learners: important Canadian scientists or scientific and technological inventions, such as the following: the Canadarm communications inventions linked to Canada and Canadian inventors (e.g., Alexander Graham Bell – the telephone, Reginald Fessenden – radio and sonar, Donald Hings – the walkie-talkie) environmental policies and practices in British Columbia green economies, energy policies, and taxation in BC and Canada reduce, reuse, recycle policies and practices

PLANNING GUIDELINES

Linguistic Competencies

Vocabulary	•	words and expressions in relation to topic areas	general content; academic, occupational, and vocational areas; social participation
	•	expanding range of abstract, technical, idiomatic, and conceptual vocabulary to report and discuss personal and factual information and to express ideas, opinions, and feelings about familiar topics and issues	cutting edge, version, gadget, widget, thingy, ozone layer, ice cap, extinct/endangered/threatened
Grammar	•	imperative vs. present simple for giving instructions discourse and sequence markers for giving instructions, especially with gerunds modals of advice	Take off the lens cap vs. You take off the lens cap. First of all, before inserting the SIM card; after exiting the application; finally should, ought to, had better
Pronunciation	•	English phonological sound systems to interpret spoken	sound segments, rhythms, and intonations

discourse

RESOURCES

Science

Big Bang Theory: Overview – All About Science

This article gives an introduction to the Big Bang Theory and is divided into five sections including common misconceptions, evidence, and theological arguments

Uses: Learners summarize and discuss the implications of each section.

<u>The Habitable Planet: A Systems Approach to Environmental Science –</u> <u>Annenberg Learner</u>

This collection of 13 half-hour videos covers a variety of environmental topics.

Uses: Learners reduce one video to notes and summarize for the others.

Technology

The Greatest Canadian Invention from CBC – Wikipedia

This page has a list of the top 50 Canadian inventions as chosen on the CBC documentary from 2007 with links to information about each. **Uses:** Learners access the list online, navigate the website, and summarize information about one of the inventions and inventors.

Video Channel – How Stuff Works

This extensive collection of technology, science, and other videos is accessible by categories or by most popular. **Uses:** Learners access videos online and reduce a chosen topic to notes.

Environment

David Suzuki Foundation

This site offers pages on hot issues, blogs, and suggestions and recommendations for individual action and change. **Uses**: Learners understand moderately complex instructions for environmental change at a personal level.

<u>Plate Tectonics (Dec. 29, 2007, 10:24) – YouTube</u>

This video gives a detailed introduction to the science of plate tectonics. **Uses**: Learners reduce narration to notes.

Quirks and Quarks Radio Program – CBC

This excellent national weekly science program explores a wide range of topics.

Uses: Learners access episodes online and reduce a story to notes.

Stuff to Blow Your Mind Podcast – How Stuff Works

This page has links to the weekly science podcast, videos, and more. **Uses**: Learners access episodes or videos online and reduce a story to notes.

Video Library – Common Craft

This website has a series of short animated videos in simple English with graphic support explaining key components or issues of technology and other topics.

Uses: Learners access videos online and reduce a chosen topic to notes.

Footprint Calculator – Global Footprint Network

This visually appealing quiz can be adjusted for learners' language levels. The website also offers information about footprint science. Uses: Learners access the quiz online and follow instructional prompts to complete it and record their results.

RESOURCES

Environment (cont.)

Global Footprints – National Geographic

This photojournalistic slideshow with captions to describe the scenes captures the footprint of three families from Botswana, the USA, and India. **Uses**: Learners discuss the similarities and differences between the photos.

Living Planet Report – World Wildlife Fund Global

This website offers many resources surrounding the conservation efforts of the WWF including videos, articles, reports, information about the Earth, and more.

Uses: Learners navigate the site to find information for short presentations.

My Footprint: Ecological Footprint Quiz – Center for Sustainable Economy

This quiz takes an inventory of personal resource consumption and adds a powerful twist after the last question.

Uses: Learners access the quiz online and follow instructional prompts to complete it and record their results.

Public Service Announcement (PSA) Examples

Canadian Red Cross: Stand Up 2 Bullying PSAs – Ontario Youth Winners

This page has a collection of short 30-second video PSAs created by High School students depicting how bystanders can make a difference in bullying situations.

Uses: Learners reduce the PSAs to notes and compare the presentation style with other videos.

Feed The Pig PSAs – YouTube Channel

This collection of videos includes an informative short film that follows the making of the series of PSAs for financial literacy.

Uses: Learners take notes about the steps taken to produce the PSAs.

<u>Heal the Bay: The Majestic Plastic Bay: A Mockumentary (Aug. 14, 2010, 4:00) – YouTube</u>

This is a funny public advocacy announcement narrated by Jeremy Irons. This short film follows the journey of a plastic bag from a California grocery store to the Pacific Ocean in a satirical style.

The Story of Stuff Project

This excellent website has blogs, videos, podcasts, and resources surrounding production and consumption patterns in the global marketplace.

Uses: Learners access videos and podcasts and reduce discourse to notes for discussion.

What the World Eats Part I – TIME Photos

This photo slideshow compares and contrasts food consumption, lifestyles, and household composition of 16 homes in different countries. **Uses:** Learners discuss the similarities and differences between the photos.

World Wildlife Fund Canada

This website showcases one of the country's leading conservation organizations, enjoying the active support of more than 150,000 Canadians. **Uses**: Learners navigate the site to find information for short presentations.

Uses: Although comprehending satire is a CLB 9+ task, instructors can help learners reduce film to notes and compare the presentation style with other videos.

Journeyman Pictures: Gross National Happiness – Bhutan (Dec. 21, 2007, 16:31) - YouTube

This is an informative and interesting comparison documentary video that examines GNH in Bhutan and includes footage from the country. **Uses:** Learners reduce documentary to notes and compare the presentation style with other videos.

MADD Canada Media Campaigns – MADD Canada Research Library

This page has an excellent collection of video, radio, and print PSAs from MADD (Mothers Against Drunk Driving).

Uses: Learners reduce the PSAs to notes and compare the presentation style with other videos.

GENERAL RESOURCES

Public Service Announcement (PSA) Examples (cont)

Morten Sandergaard: What is "Gross National Happiness"? (Dec. 13, 2010, 3:29) – YouTube

This is a short film that uses a "simpleshow" animation format to explain GNH from its origins and applications in the country of Bhutan.

Uses: Learners reduce film to notes and compare the presentation style with other videos.

Project Skills

10 Essentials to an Effective TV Commercial – About.com

This page is the first of two pages that list the 10 essentials for a commercial.

Uses: Learners understand a given section and then relate their instructions to others.

<u>13 More Tips to Help You Record Narration Like the Pros – The Rapid E-</u> Learning Blog

This post gives a concise overview of the recording process for narration. **Uses**: Learners understand moderately complex instructional texts for multistep procedures to record a narration.

Effective Listening and Notetaking – North Shore Community College

This pdf resource has excellent tips and techniques for note-taking as well as common abbreviations, bad habits, mapping examples, and more. Uses: Learners understand moderately complex instructions for note-taking.

<u>How to Make a Short Film with No Budget (and Questionable Talent) –</u> <u>Luceo Magazine</u>

This engaging article follows the steps to making a short film from having an idea and a camera, to writing the story, and finally finding an audience. **Uses**: Learners reduce the article to notes about the steps to make a PSA.

Wildlife Public Service Announcements – Canadian Wildlife Federation

This page has summaries and links to wildlife PSAs. **Uses**: Learners reduce PSAs to notes and compare the presentation style with other videos.

How to Upload a Video on YouTube (Mar. 11, 2008, 5:29) - YouTube

This video outlines the steps to upload a video from signing up with YouTube through the process of uploading. **Uses**: Learners understand moderately complex directions and instructions for uploading a video to YouTube.

Imperatives – University of Victoria English Language Centre

This page gives a concise review of imperatives. Uses: Learners review forms for presentations and navigate the site to complete accompanying online exercises.

Listening and Note-taking – Student Learning Commons Resources SFU

This page has an excellent list of links to listening resources and note-taking strategies from SFU and other Canadian and American universities. There is also an engaging comic strip story about note-taking from SFU to introduce the subject.

Uses: Learners navigate the site to find note-taking resources online and understand moderately complex instructions for note-taking.

Modals of Advice - University of Victoria English Language Centre

This page gives a concise review of modals of advice. **Uses**: Learners review forms for presentations and navigate the site to complete accompanying online exercises.

RESOURCES

Project Skills (cont.)

<u>My Tube: Changing the World with Video Public Service Announcements –</u> <u>Deborah Kosdras, Ph.D.</u>

This is an excellent page that contains a six-session lesson plan with resources and extension activities.

Uses: Learners follow moderately complex instructions and multistep procedures related to making a PSA.

Persuasion Map – Read Write Think

This simple website provides a printable visual template for an essay or presentation thesis, main points, supporting points, and conclusion. **Uses**: Learners follow prompts to build a skeleton for presentation research.

CLB Aligned Resources

ELSA Assessment – ELSA Net

This page has essential materials for every instructor including the <u>Formative Assessment Toolkit (CLB 7)</u> and the <u>Learner's Self-Assessment</u> <u>Toolkit (CLB 7)</u>. There are links to Instructor/Student Guidelines, Progress and Exit Testing Guidelines, and ready to use templates to complement the exercises and techniques.

Uses: This page is rich with excellent resources for CLB aligned formative assessment, student reflection, and portfolio work.

LINC 5-7 Classroom Activities, Volumes 1 & 2 – Toronto Catholic District School Board

This is one of the best resources for an ELSA instructor and is highly recommended for this curriculum. All of the activities are CLB aligned, although ELSA instructors should be aware of the differences between LINC levels and ELSA levels when using this resource. The website offers pdf copies of Volumes 1 & 2 with audio files and online activities associated with various chapters.

Uses: The following chapters are particularly useful for this unit: Chapter 1, Volume 1: Academic Skills Chapter 5, Volume 2: Managing Information ELSA 6 Unit 8 Science, Technology, & Environment

Using Movie Maker to Create Public Service Announcements – Read Write Think

This two page pdf gives a 15-step set of instructions for using Windows Movie Maker.

Uses: Learners understand moderately complex instructional texts for multistep procedure to make a PSA.

Vocabulary Exercises for the Academic Word List – University of Victoria

This page has links to vocabulary exercises from the Academic Word List organized by subsection.

Uses: Learners complete exercises online to build academic vocabulary.

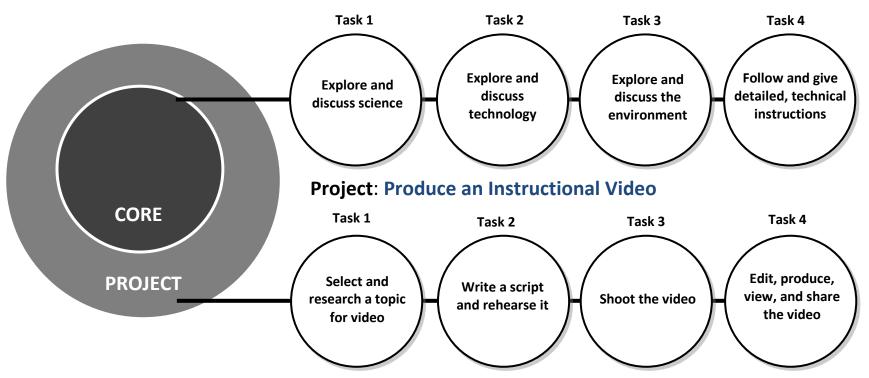
LINC 5-7 Classroom Activities (Vol. 1 and 2) e-Resources – Toronto Catholic District School Board

This website has quick links to pdf files for chapters 1, 2, 4, 5, and 7 in the LINC 5-7 document and online activities that align with the curriculum. **Uses**: The following chapters are well-suited to this unit:

Chapter 1, Volume 1: Academic Skills

Chapter 5, Volume 2: Managing Information

At a glance: SCIENCE, TECHNOLOGY, & ENVIRONMENT



Core Curriculum: Science, Technology, Environmental Literacy

SCOPE & SEQUENCE

ELSA 6

of Sample Tasks

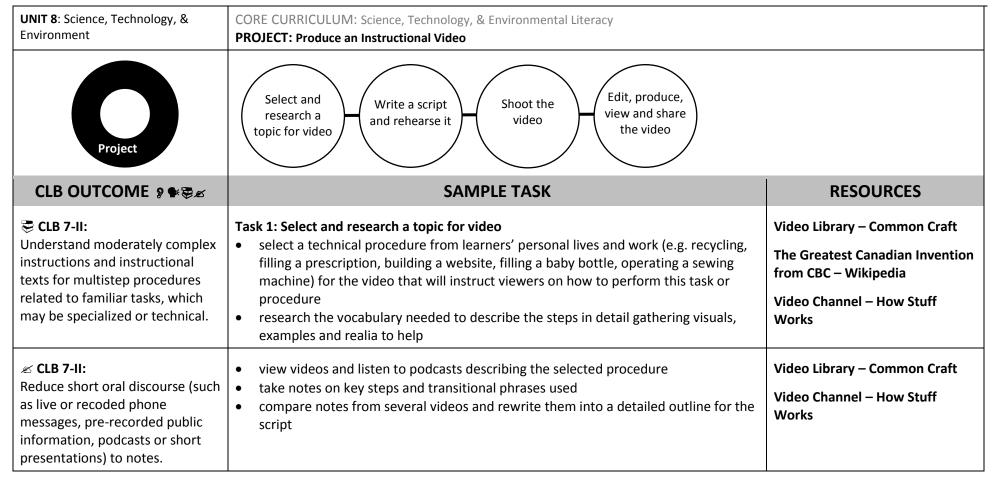
UNIT 8: Science, Technology, & Environment	CORE CURRICULUM: Science, Technology & Environmental Literacy PROJECT: Produce an Instructional Video	
Core	Explore and discuss science Explore and discuss the technology Explore and discuss the environment Follow and give detailed, technical instructions	
CLB OUTCOME 🤋 🗣 🕏 🕿	SAMPLE TASK	RESOURCES
CLB 7-II: Reduce short oral discourse (such as live or recoded phone messages, pre-recorded public information, podcasts or short presentations) to notes.	 Task 1: Explore and discuss science listen to podcasts about a science topic of interest (e.g., medical advances, government funding for research, space exploration, the Nobel Prizes) take notes on the podcast as follows: reduce information to important points with accurate details and no major omissions take notes in point form convey the essential information discuss the value of science in culture and society examine the media's role in keeping people informed about science 	Quirks and Quarks Radio Program – CBC Stuff to Blow Your Mind Podcast – How Stuff Works Listening and Note-taking – Student Learning Commons Resources SFU
CLB 7-II: Understand moderately complex directions and instructions for technical or non-technical tasks.	 Task 2: Explore and discuss technology watch short videos on how different technologies work: follow sequence markers, cohesive devices (connecting words, pronoun reference, parallel structure, and substitution) or other linguistic clues to infer the order of steps 	Video Channel – How Stuff Works The Story of Stuff Project

UNIT 8: Science, Technology, & Environment	CORE CURRICULUM: Science, Technology & Environmental Literacy PROJECT: Produce an Instructional Video		
CLB OUTCOME 🖇 🕏 🕿	SAMPLE TASK	RESOURCES	
	 Task 2: Explore and discuss technology (cont.) examine the role of the rapid obsolescence of technology in over-consumption view the short video "The Story of Stuff" and examine how technologies affect the environment 		
CLB 7-III: Give extended warnings, suggestions, recommendations or advice.	 Task 3: Explore and discuss the environment take an online quiz to assess level of personal consumption, compare the results with others, and create a chart to summarize the results give suggestions for reducing personal consumption: use appropriate persuasive arguments use modals with the appropriate level of politeness compare ecological footprints across countries investigate other environmental issues (e.g., global warming, species endangerment, rising sea levels) read charts and maps on the WWF website extract up to five interesting pieces of information, facts or impressions, write a related discussion question and present these in small groups for discussion identify and describe five key environmental concerns give warnings about these concerns and recommend possible solutions 	My Footprint: Ecological Footprint Quiz – Center for Sustainable Economy Footprint Calculator – Global Footprint Network World Wildlife Fund Canada Modals of Advice - University of Victoria English Language Centre Imperatives – University of Victoria English Language Centre	
CLB 7-II: Understand moderately complex instructions and instructional texts for multistep procedures related to familiar tasks, which may be specialized or technical.	 Task 4: Follow and give detailed, technical instructions research and read a procedure of interest to the whole class (e.g., recycling, using a PVR) read instructions and procedures, and perform procedure or summarize it: interpret sequence and location signals and implied meanings to infer the correct steps follow the instructions to complete the task repeat in pairs or small group and summarize to the rest of the class 	LINC 5-7 Classroom Activities, Chapter 5, Managing Information	
♥ CLB 7-II: Give instructions and directions for technical and non-technical tasks, procedures and processes.	 select a technology, a scientific procedure or an environmentally friendly act (e.g., using a smart phone, drawing a blood sample, composting) that is relevant and interesting to each learner's life and work in pairs or individually describe the procedure to classmates as follows: use the correct sequence of steps use clear references and provide necessary details use sequencing intonation so that listeners can follow 	Imperatives – University of Victoria English Language Centre	

SCOPE & SEQUENCE

ELSA 6

of Sample Tasks



UNIT 8 : Science, Technology, & Environment	CORE CURRICULUM: Science, Technology, & Environmental Literacy PROJECT: Produce an Instructional Video		
CLB OUTCOME 🤋 🗣 🗟 🗷	SAMPLE TASK	RESOURCES	
CLB 7-III: Give extended warnings, suggestions, recommendations or advice.	 Task 2: Write a script and rehearse it negotiate and compromise with the group to write a script for the video to do the following: give detailed, sequenced instructions on how to perform a task or procedure allow all group members a role use accurate vocabulary to describe both the parts used and the process use realia and visuals to enhance the viewing experience edit first draft of the script and rewrite it rehearse the script and get feedback on the performance 	Persuasion Map – Read Write Think	
♥ CLB 7-II: Give instructions and directions for technical and non-technical tasks, procedures and processes.	 Task 3: Shoot the video view videos about shooting and producing videos shoot the instructional video, ensuring the instructions are accurate, sequenced, and clear. 	10 Essentials to an Effective TV Commercial – About.com How to Make a Short Film with No Budget (and Questionable Talent) – Luceo Magazine	
CLB 7-II: Understand moderately complex directions and instructions for technical or non-technical tasks.	 Task 4: Edit, produce, view and share the video view videos about editing and uploading videos and share the video via email or YouTube invite others in the school community and host a screening party serving popcorn and beverages provide the audience with a feedback form to gather comments 	Using Movie Maker to Create Public Service Announcements – Read Write Think 13 More Tips to Help You Record Narration Like the Pros – The Rapid E- Learning Blog How to Upload a Video on YouTube	