

Course
Ecological Issues: Resource Waste
TSC-P101-2
Presecondary



“For all things share the same breath—the beast, the tree, the man, they all share the same breath.”

Seattle, Chief of the Squamish and Duwamish nations (ca. 1786-1866)

Presentation of the Course *Ecological Issues: Resource Waste*

The course *Ecological Issues: Resource Waste* is designed to help adult learners deal competently with real-life situations involving ecological issues related to the accumulation of consumer waste.

It helps them manage their resource waste in light of ecological issues.

By the end of the course, adult learners will understand that they are an integral part of the environment and that their actions have an impact. By thinking about the advantages of preserving an

environmental balance, they will make connections between waste, pollution, consumption and resources. The interdependence of the answer to their personal needs and waste management will encourage them to adopt environmentally friendly behaviour on a daily basis.

Dealing With the Real-Life Situations

Dealing effectively with real-life situations is based on actions. These actions are grouped into categories and make use of a set of resources that include operational competencies and essential knowledge. During the learning process, adults are expected to construct knowledge related to these resources in order to be able to deal appropriately with their real-life situations.

The class of situations, categories of actions, operational competencies and essential knowledge constitute the compulsory elements of the course. These elements are explained in detail under their respective headings.



Class of Situations Addressed by the Course

This course addresses a single class of situations: *Resource waste management*.

All human activity involving the consumption of natural resources and technological products generates residual material. The environmental management of natural resources such as water, air and soil, as well as of products that meet various needs, is an everyday personal challenge and a major social issue.

The situations dealt with in this course involve household waste collection, home heating, transportation, clothing recycling, the type of school supplies used, recreational equipment, consumption of water and household cleaners, etc.

Class of Situations	Examples of Real-Life Situations
Resource waste management	<ul style="list-style-type: none">▪ Household waste collection (e.g. packaging, food)▪ Consumption of water and personal hygiene products▪ Gardening practices▪ Workplace practices (e.g. waste disposal, consumption of energy and materials)▪ Clothing recycling▪ Renovations and woodworking▪ Family meals▪ Use of recreational equipment and resources▪ Type of school supplies used (e.g. paper, printer cartridges)▪ Consumption of water and household cleaners

Categories of Actions

The *categories of actions* are groups of actions that are appropriate for dealing with the real-life situations addressed in the course. *Examples of actions* are provided to illustrate the scope of the category in a variety of contexts.

Categories of Actions	Examples of Actions
<ul style="list-style-type: none"> ▪ Listing types of resource waste 	<ul style="list-style-type: none"> ▪ Lists the contents of his/her garbage can ▪ Evaluates his/her consumption of water in daily activities ▪ Lists substances discharged into the sewer system ▪ Identifies air pollutants ▪ Recognizes certain characteristics of resource waste
<ul style="list-style-type: none"> ▪ Examining the impact of resource waste on the environment 	<ul style="list-style-type: none"> ▪ Relates resource waste to consumer needs ▪ Evaluates certain effects on water, air and soil ▪ Recognizes activities involving the overexploitation of resources ▪ Evaluates the life cycle of a product
<ul style="list-style-type: none"> ▪ Adopting environmentally friendly behaviours 	<ul style="list-style-type: none"> ▪ Establishes his/her consumer criteria ▪ Chooses recyclable packaging ▪ Organizes separate waste collection ▪ Reuses clothing or objects ▪ Organizes composting ▪ Uses environmentally friendly personal hygiene and household cleaning products ▪ Looks for products containing recycled materials ▪ Considers a recreational activity with minimal impact on the environment ▪ Reduces waste discharged to the air and the sewer system

Compulsory Elements and End-of-Course Outcomes

The compulsory elements are those that the teacher must absolutely take into account when designing learning situations.

Class of Situations

Resource waste management

Categories of Actions

- Listing types of resource waste
- Examining the impact of resource waste on the environment
- Adopting environmentally friendly behaviours

Operational Competencies

Exercises critical and ethical judgment

- Verifies the reliability of information
- Identifies the advantages and disadvantages of certain practices
- Takes into account the value of the elements of the environment to be preserved
- States the reasons for adopting ethical behaviour
- Is aware of his/her influence

Thinks logically

- Identifies the characteristics of different types of resource waste
- Classifies different types of resource waste
- Makes connections between the accumulation of waste, its characteristics and certain pollutants
- Anticipates the impact of certain types of resource waste management on the quality of the environment
- Plans appropriate and consistent actions

Essential Knowledge

- Personal guidelines
- Characteristics of resource waste
- Impact of resource waste on the environment
- The three R's: reduce, reuse, recycle

The end-of-course outcomes describe how adults make use of the compulsory elements to deal with the real-life situations addressed in the course.

End-of-Course Outcomes

In order to deal with the class of situations *Resource waste management*, adult learners adopt a systematic and critical approach that will enable them to make relevant gestures to protect the environment.

Adult learners list the types of resource waste, identify their characteristics and classify them. They examine their impact on the quality of the environment based on information gathered from news reports and other sources whose reliability has been verified. They make connections between the accumulation of waste, its characteristics and certain pollutants. Finally, they identify the advantages and disadvantages of certain resource waste management practices so that they can determine their impact on the environment.

Aware of their influence, adult learners plan appropriate and consistent actions that take into account the value of the elements of the environment to be preserved and that involve reducing, reusing or recycling resource waste. Based on their personal guidelines, they clearly state their reasons for adopting ethical behaviour.

Evaluation Criteria

- Systematically lists types of resource waste
- Methodically examines the impact of resource waste on the environment
- Plans consistent actions to protect the environment

Operational Competencies

The contribution of each operational competency is described in terms of the actions that are appropriate for dealing with the real-life situations in this course. These operational competencies are addressed in other courses and therefore all of the courses taken together contribute to their development.

In this course, only the following operational competencies are addressed: *Exercises critical and ethical judgment* and *Thinks logically*.

Contribution of the Operational Competency *Exercises critical and ethical judgment*

The operational competency *Exercises critical and ethical judgment* consists in understanding the personal and social needs and problems addressed in the real-life situations. Adult learners assess the appropriateness of their choices based on the impact they have on the environment. This operational competency enables them to open up to points of view that differ from their own reference points and observations in order to form an opinion.

Adult learners verify the reliability of the information gathered by consulting more than one source. They identify the advantages and disadvantages of certain recovery practices and qualify their explanations. They state the reasons that motivate them to adopt ethical behaviour and how this behaviour is consistent with environmental principles. They have an accurate perception of their influence on the situation and take into account the value of the elements of the environment that are being threatened.

Contribution of the Operational Competency *Thinks Logically*

The operational competency *Thinks logically* helps adult learners develop a rational understanding of the connections between resource waste and the quality of the environment. After doing research and making observations and analogies, they are able to use resources rationally.

Adult learners compare the different types of resource waste and their characteristics. They classify them by determining what the different categories have in common. They anticipate the impact of certain types of resource waste management on the quality of the environment, making connections between the accumulation of waste, its characteristics, and water, air and soil pollution. They plan appropriate and consistent actions based on rational arguments.

Essential Knowledge

Personal guidelines

- Consumer needs, constraints, points of view
- Consumer habits and criteria

Characteristics of resource waste

- Recyclable materials: paper, cardboard, glass, plastic, textiles, metal
- Animal, plant and mineral substances that can be composted
- Waste that cannot be reused, recycled or composted
- Concept of renewable natural resources

Impact of resource waste on the environment

- Interdependence of the elements of the environment: erosion, eutrophication, degradation, introduction of species, acidification, greenhouse effect, contamination
- Environmental nuisances: visual pollution, odours, noise, etc.
- Hygiene issues: bacteria (coliforms), viruses, parasites
- Hazardous waste (pesticides, fertilizers, heavy metals, pharmaceutical waste, pseudohormones, detergents, chlorine): toxicity, concentration
- Impact of human activities on water, air and soil quality

The three R's: reduce, reuse, recycle

- Reduce: overpackaging, waste, disposable products, overconsumption (needs, quality), rental, concept of sustainable development (society, economy, environment)
- Reuse: returnable items, recovery, reuse (used clothing stores, flea markets, garage sales, secondhand stores)
- Recycle: sorting, separate waste collection, pictographs, recycling, composting

Attitudes

The following attitudes are provided as suggestions only. The development of these attitudes can help adults to become more competent in dealing with the real-life situations in this course.

Responsibility	Realism
Adult learners develop a sense of responsibility as they become aware of the social and environmental impact of their everyday actions.	Adult learners act realistically: each person can make a difference.
Open-mindedness	
By being open-minded, adult learners see solutions they had previously missed. By opening up to others, they develop the solidarity needed to act effectively.	

Complementary Resources

The following resources are provided as suggestions only and consist of references that may be consulted in learning situations.

Social Resources	Material Resources
<ul style="list-style-type: none">▪ Recycling and sorting centres▪ Ecocentres▪ Used clothing stores▪ Local water treatment plants▪ Resource people, staff members, adult learners and other people at the education centre▪ Community organizations▪ Organizations that recycle clothing▪ Health-care professionals and environmental experts▪ Government services▪ Private and public services▪ Neighbours	<ul style="list-style-type: none">▪ Camera▪ Recycling bins▪ Crop farming, organic farming▪ Documentation on the environment▪ Packaging, logos and product labels▪ Fertilizer▪ Excerpts of regulations respecting water, air, soil and noise pollution▪ Films about ecological issues▪ Electricity, gas or oil bills▪ Computer, environmental protection and recycling Web sites

Contribution of the Subject Areas

The contribution of other subject areas, in particular knowledge related to Languages and to Mathematics, Science and Technology, is also useful for dealing with the real-life situations in this course. The elements identified for each subject area are not compulsory and do not constitute prerequisites.

Subject Area: Languages

Program of study: *English, Language of Instruction*

- Oral interaction to exchange information, advice and opinions on resource management (e.g. water use, hazardous materials disposal)
- Listening to informative discourse (e.g. news reports, talk shows, documentaries, public presentations) on resource management
- Reading informative texts (e.g. public notices, pamphlets, schedules, posters, newspaper articles) providing information, instructions and advice on resource management
- Writing informative texts (e.g. letters of inquiry/complaint/opinion, records and logs of resource use)

Subject Area: Mathematics, Science and Technology

Program of study: *Mathematics*

- Interpreting and inferring information involving numbers
- Interpreting and organizing qualitative or quantitative data
 - Classifying, comparing and grouping together elements
 - Using set notions
- Estimating percentages
- Estimating distance
- Using proportions
- Interpreting a map to locate a place or situate an event

Program of study: *Computer Science*

- Searching for information on the Internet or in a data bank
 - Using a search engine
 - Consulting newspapers and other media
- Producing and transmitting information about the environment
- Corresponding by e-mail

Andragogical Context

Every day, the media address ecological issues related to waste management: unwanted smells, inadequate recycling, the “not-in-my-back-yard” syndrome, management of landfills, accumulation of hazardous waste, etc. The course *Ecological Issues: Resource Waste* encourages adult learners to follow the news in order to make their learning more interesting and meaningful.

The suggested learning situations are related to resource waste management at the adult learner’s home, as well as at the education centre. The best incentives for learning are example and experience.

The course *Ecological Issues: Resource Waste* encourages adult learners to take concrete action. They may, for example, become involved in a paper and plastic recycling campaign in the centre, launch a campaign to compost food scraps in the cafeteria, or set up a used clothing store. Adult learners who apply their learning assimilate it more effectively. At home, adult learners can adopt more environmentally friendly behaviours and make more enlightened consumer choices.

Since learning in this course touches on geography, biology and sociology, it is a good idea to take every opportunity to develop a multidisciplinary approach to the issues addressed. Such an approach provides adult learners with an opportunity to examine different aspects of the real-life situations, based on a diversity of knowledge.

This course enables adults to learn problem solving. It focuses on an approach developed by the adult learners with the teacher’s help. By addressing problems as challenges, adult learners are stimulated in their critical approach and may be more inclined to do research. The teacher supports them in their reflections and guides them in the construction and mobilization of the necessary resources.

Teachers facilitate investigation, reflection and action, which consolidate the adult learners’ responsibility. Adult learners make connections between the concepts and phenomena addressed in the course. The teacher may raise questions that lead them to reflect on their consumer needs and habits in order to open up to different points of view. They receive the support they need to evaluate their work methods. They are encouraged to regularly review their consumer choices and their everyday behaviour. Finally, the course promotes individual actions so that each adult learner feels that he or she can adopt environmentally responsible behaviour.

Learning Situation

The learning situation that follows is provided as an example to show teachers how the principles of the education reform can be applied in the classroom.

It is authentic in the sense that it addresses a real-life situation (taken from the class of situations in the course) that adults may find themselves in. It is sufficiently open and comprehensive to allow adult learners to explore several important aspects related to dealing with this real-life situation.

The examples of actions presented in the course help the teacher to identify those actions that an adult would take to deal with the real-life situation. The teacher can then refer to these examples in order to develop pertinent learning activities.

The learning situation is organized in terms of the three steps of the teaching-learning process, which are as follows:

- planning learning
- actual learning
- integrating and reinvesting learning

These steps highlight the principles of the education reform insofar as they encourage adults to be active, to reflect on their learning and to interact with their peers when the learning context is suitable. They include learning activities and may also include evaluation activities intended to support adults in the learning process.

These activities help learners to construct knowledge related to the compulsory elements of the course that are targeted by the learning situation concerned: one or more categories of actions, essential knowledge and the actions of the operational competencies associated with the categories of actions.

The example provided also refers to certain teaching strategies—pedagogical methods and techniques—that can be selected according to the learners, the context and the learning environment. Certain learning strategies may also be suggested, as well as a variety of material and social resources.

Example of a Learning Situation

Food-Related Resource Waste

In the course *Ecological Issues: Resource Waste*, adult learners explore real-life situations involving family meals and household waste collection.

The teacher takes advantage of the recent publication of an article on municipal recycling in a newspaper or magazine to present certain problems and difficulties encountered by recovery plant staff and to spark a discussion of the responsibility of every citizen to manage his or her own recycling. Adult learners become aware of the value of their actions, each person's management having an impact on the success of the community process. To contextualize the learning situation, the teacher proposes inviting an expert on municipal recycling to a community meal to answer questions raised during the above-mentioned discussion. Participants are told that they must inventory the resource waste created at the meal. This activity is related to knowledge of the characteristics of resource waste and is intended to reduce its impact on the environment. The learning situation proposed at the end of the meal enables adult learners to apply the operational competencies *Exercises critical and ethical judgment* and *Thinks logically*.

To plan the meal, the adult learners choose a menu and make a list of all the ingredients and equipment they will need. An expert is invited to speak about the characteristics of recyclable materials. He or she explains the procedure for facilitating municipal recycling operations. After the presentation and with the teacher's help, the adult learners construct a table of characteristics of resource waste: solid, liquid, natural resource, biodegradable, recyclable. The table is discussed and reviewed with the expert and the teacher, which

enables the adult learners to briefly explain the impact of each type of resource waste on the environment.

Then the adult learners clean up. In teams, they inventory the types of resource waste created by the meal and, after discussing their characteristics, place them in different bins. Each team completes the table created earlier.

The following learning activity is a guided Web search (<<http://www.recyc-quebec.gouv.qc.ca/client/fr/accueil.asp>>). The adult learners associate each type of resource waste created by the meal with actions related to the three R's (reduce, reuse, recycle) and create a table. The appropriateness of the actions will be corroborated or refuted during a group discussion supervised by the teacher. After a brainstorming session, the class draws up a list of feasible actions based on the meal, and on their meals at home. To justify and support the actions chosen, the adult learners explain how these solutions are environmentally friendly and feasible, based on their newly constructed knowledge.

To generalize the adult learners' knowledge about recycling to situations other than meals, the teacher has them pursue their reflection at home. Over a period of seven days, they must inventory their own resource waste and fill out a waste log, available on the following Web site:

<<http://www.reseausourceseries.org/pdf/journaldesdechets.pdf>>.

They must find ways of reducing the impact of each type of waste.

To validate the information gathered, adult learners share it with their peers and the teacher. Each person makes observations and

shares his or her experience. Such discussion reinforces the adult learners' awareness of the value of recycling and reassures them in their choices.

Elements of the Course Addressed by the Learning Situation

Class of Situations	
Resource waste management	
Learning Situation	
Food-Related Resource Waste	
Categories of Actions	
<ul style="list-style-type: none"> ▪ Listing types of resource waste ▪ Examining the impact of resource waste on the environment ▪ Adopting environmentally friendly behaviours 	
Operational Competencies	Essential Knowledge
<ul style="list-style-type: none"> ▪ Exercises critical and ethical judgment ▪ Thinks logically 	<ul style="list-style-type: none"> ▪ Personal guidelines ▪ Characteristics of resource waste ▪ Impact of resource waste on the environment ▪ The three R's: reduce, reuse, recycle
Complementary Resources	
<ul style="list-style-type: none"> ▪ Resource people, staff members, adult learners and other people at the education centre ▪ Health-care professionals and environmental experts ▪ Private and public services ▪ Recycling bins ▪ Documentation on the environment ▪ Packaging, logos and product labels ▪ Computer, environmental protection and recycling Web sites 	

