

Course
Everyday Technologies
TSC-P121-2
Presecondary



“Man and his safety must be the main concern of any technological venture.”

Albert Einstein (1879-1955)

Presentation of the Course *Everyday Technologies*

The course *Everyday Technologies* is designed to help adult learners deal competently with real-life situations in which the adequate use of technology requires an understanding of its concepts and principles.

The course prepares adult learners to perform various household chores safely and effectively.

By the end of the course, adult learners will be able to use everyday technologies in an appropriate and safe manner. In their planning, they will be able to take into account their needs and any constraints, diagnosing the problem, identifying what they can do about it and consulting a specialist when needed.

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: *Using everyday technologies at home*.

These situations involve making minor home repairs, doing housekeeping tasks, maintaining tools and devices and using toxic substances safely. Adult learners perform household tasks involving technology with a greater sense of comfort, confidence and

independence. The situations in this class force adult learners to reconsider how they use, store and maintain equipment, tools, devices and household products, to explore how they work and to plan actions that ensure their family's safety.

Class of Situations	Examples of Real-Life Situations
Using everyday technologies at home	<ul style="list-style-type: none">▪ Assembling furniture▪ Doing minor home repairs▪ Repairing equipment▪ Repairing surfaces▪ Maintaining devices▪ Gardening▪ Doing housekeeping tasks▪ Doing seasonal housekeeping tasks (spring, fall)▪ Washing clothing▪ Repairing furniture▪ Improving their comfort level▪ Keeping hazardous objects or products out of children's reach▪ Using toxic substances

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"> ▪ Studying a technical problem in the home 	<ul style="list-style-type: none"> ▪ Identifies an error in using the tool, technical device or household product ▪ Identifies a defect in the tool or technical device ▪ Explores the main functions of the tool, technical device or household product ▪ Explores the main components of a device or household product ▪ Explores the characteristics of various materials ▪ Explores the characteristics and underlying principles of a tool, technical device or household product ▪ Considers the possible uses of the material, device, tool or household product ▪ Considers the impact of certain materials on the environment
<ul style="list-style-type: none"> ▪ Handling materials, tools, technical devices or household products safely 	<ul style="list-style-type: none"> ▪ Consults directions or other sources of information ▪ Consults a drawing or diagram ▪ Considers the advantages and disadvantages of the material, tool, device or household product ▪ Considers the safety rules associated with a material, tool, device or household product ▪ Takes into account the properties and characteristics of the material, tool, device or household product ▪ Recognizes the more fragile parts

Categories of Actions	Examples of Actions
<ul style="list-style-type: none"> ▪ Correcting an everyday problem requiring the use of technology 	<ul style="list-style-type: none"> ▪ Identifies the steps in a minor repair ▪ Produces a drawing or diagram ▪ Chooses the appropriate material ▪ Chooses a tool, device or household product appropriate to the chosen material ▪ Considers the risks associated with the task at hand ▪ Considers his/her ability to perform the task ▪ Consults support services ▪ Uses tools and materials safely and methodically, taking their properties and characteristics into account

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

Using everyday technologies at home

Categories of Actions

- Studying a technical problem in the home
- Handling materials, tools, technical devices and household products safely
- Correcting an everyday problem requiring the use of technology

Operational Competencies

Acts methodically

- Follows the established procedure
- Develops an effective plan of action
- Adapts his/her actions
- Determines his/her ability to do the job
- Puts away tools and materials

Thinks logically

- Formulates hypotheses
- Establishes causal links between the characteristics of a technology and its use
- Identifies the operating conditions and principles of technologies
- Anticipates the effects of his/her actions

Essential Knowledge

- Safety
- Properties and characteristics of materials
- Properties and characteristics of tools and technical devices
- Properties and characteristics of common household products
- Graphics

The end-of-course outcomes describe how adult 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 *Using everyday technologies at home*, adult learners effectively carry out tasks using materials, tools, technical devices and household products. These actions are based on an understanding of the concepts and principles underlying how they work.

In the case of a minor problem, adult learners examine the situation based on an adequate understanding of the properties and characteristics of the technologies involved. They formulate hypotheses about the causes of the problem and possible solutions. They establish causal links between the characteristics of the technologies and their use, which enables them to choose the appropriate materials, tools, devices and products. They identify the scientific principles and operating conditions associated with the technologies in question.

Adult learners who use different technologies take their properties, characteristics and safety rules into account. They consult directions, drawings and any other appropriate source of information. They take into account the advantages and disadvantages of various materials, as well as the principles governing the transformation of certain materials upon contact with certain products. They plan their actions carefully and consider their results and their effect on the situation.

The means chosen to correct the problem must be consistent with the results of their analysis and their choice of technology. Adult learners formulate a plan, make drawings or diagrams and follow the established procedure. They determine their ability to act effectively and safely, and recognize their limits. Throughout the process, they verify the quality of their work and make the necessary adaptations. They ensure that the results are consistent with the desired outcome. Finally, they safely store tools and materials.

Evaluation Criteria

- Methodically evaluates a technical problem in the home
- Appropriately and safely handles materials, tools, technical devices and household product
- Makes the appropriate corrections to an everyday problem requiring the use of technology

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: *Acts methodically* and *Thinks logically*.

Contribution of the Operational Competency *Acts methodically*

The operational competency *Acts methodically* enables adult learners to organize how they deal with real-life situations. It enables them to systematically choose and use the appropriate methods and techniques. Adult learners can organize a sequence of appropriate actions starting with an analysis of the situation and ending with their plan of action, taking into account possible constraints, the desired outcome and their ability to achieve the intended goal.

This competency helps adult learners follow the appropriate steps after reading directions, and develop an appropriate plan of action following an analysis of the situation. They choose different solutions, explore various strategies, demonstrate thoroughness in the performance of the tasks and determine their ability to act. Throughout the process, they evaluate the progress of the work in order to make the necessary adaptations. Once they have completed the task, they consider the consistency of the result with the desired outcome. Finally, they put away the tools and materials and clean up.

Contribution of the Operational Competency *Thinks logically*

The operational competency *Thinks logically* enables adult learners to apply a rational approach to dealing with real-life situations. It enables them to create an accurate representation of the situation and to plan appropriate and consistent actions. The approach includes analyzing the situation, making appropriate choices and using material resources judiciously. The construction of logical thinking helps adult learners structure their thoughts.

Faced with a problem related to using everyday technologies at home, adult learners mobilize this operational competency to formulate hypotheses and draw conclusions based on the information gathered as they consult user's and maintenance guides and analyze or use the material, tool, technical device or household product in question. They establish causal links between the characteristics of a material or technical device, identify the underlying principles and justify their choices. They use technology rationally and anticipate the effects of their actions.

Essential Knowledge

Safety

- Pictograms
- Safety measures
- Emergency measures
- Safe handling of materials, tools, devices and household products

Properties and characteristics of materials

- Properties of materials: density, elasticity, rigidity, mechanical strength, corrosion resistance, fire resistance, durability, maintainability, conductivity

Properties and characteristics of tools and technical devices

- Effects of one or more forces on an object (on its direction, principles of reinforcement and opposition)
- Characteristics of motion: direction, speed
- Types of motion: rotation, translation
- Basic mechanical functions: linking, lubrication
- Basic principles of simple machines: lever, inclined plane
- Classification of tools and products based on various properties and characteristics
- Appropriate handling of materials, tools, devices and household products

Properties and characteristics of common household products

- Characteristics: detergent, solvent, active ingredient (chlorine bleach, ammonia)
- Use of household products: solubility, concentration and dilution, cleaning, stain removal, protection, adhesion, lubrication

Graphics

- Properties and characteristics of a drawing
- Interpretation of a drawing
- Sketch

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.

Curiosity	Caution
Curiosity is indispensable if adult learners are to keep abreast of technological developments and new ways of doing things.	There are risks involved in using different technologies. Adult learners must consider their own safety as well as that of others.

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">▪ Suppliers▪ Specialists▪ Colleagues	<ul style="list-style-type: none">▪ Calculator▪ User's guides▪ Manufacturer's instructions▪ Materials▪ Computer with Internet access▪ Common home maintenance tools (e.g. hammer, screwdriver)▪ Various products

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*

Course (Presecondary): *Everyday Living*

- Categories of actions related to every technologies in the class of situations *Using language in everyday home life*

Subject Area: Mathematics, Science and Technology

Program of Study: *Mathematics*

- Calculating ratios when preparing household products
- Creating sets and subsets of elements associated with household products and tools
- Interpreting drawings and diagrams
- Constructing plane figures when sketching the operating principles of a tool or technical device

Program of Study: *Computer Science*

- Consulting Web sites (or the appropriate computer media) for information related to the use or maintenance of technologies: manufacturers, retailers, renovation, household tips, etc.
- Requesting information about how to do minor repairs or maintenance by e-mail or using word processing software
- Taking notes using word processing software

Andragogical Context

The course *Everyday Technologies* requires adult learners to demonstrate intellectual curiosity, independence and a responsible and confident attitude toward technologies. It is designed to shed light on how certain technologies work so that adult learners feel a sense of empowerment faced with innovation and are capable of safe and effective action.

Addressing challenges encourages adult learners to adopt a critical approach. They are more likely to participate in a situation involving action and reflection. After having experienced difficulties at school in the past, they are now introduced to concrete and interesting learning, which stimulates their need to construct knowledge.

This course enables adult learners to acquire learning based on observation, analysis and a hands-on approach. The advantage of this approach is that adult learners experiment with concrete applications of the basic scientific principles needed to deal with the

situations. This means of integrating science and technology may spark adult learners' interest in assimilating abstract concepts. The course is not intended to train technicians and certainly not to compete with specialized and semi-specialized training. It is designed to introduce adult learners to basic scientific and technological principles and logical thinking. It facilitates the safe use of appropriate technologies at home. Adult learners are encouraged to reflect on their work methods and results. They consider their actions in order to make improvements and apply them in their immediate environment.

When they successfully perform technological tasks, adult learners gain greater self-confidence and self-esteem. Success in one field sparks success in others.

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

Replacing a Thermostat

The situation proposed in the course *Everyday Technologies* involves improving one's comfort level. This project reflects adult learners' need to deal with the onset of winter, in particular by adjusting the heating system. Using a programmable thermostat improves the comfort level and reduces energy consumption. In order to contextualize the project in class, the teacher provides a programmable thermostat and the tools needed to install it, as well as a circuit diagram of a system with a power supply panel, a junction box with a mechanical thermostat and a heater. In this type of situation, adult learners must be able to interpret a drawing and choose and use the necessary tools and technical devices. They must use the competencies *Thinks logically* and *Acts methodically* and perform actions in the categories *Studying a technical problem in the home*, *Handling materials, tools, technical devices and household products safely* and *Correcting an everyday problem requiring the use of technology*.

The teacher gives a lecture on the materials the adult learners will need: junction box, bracket, tape, programmable thermostat, multimeter, pliers, screwdriver, wire strippers, connectors and screws. He or she helps the adult learners read the instructions and interpret the drawing accompanying the thermostat.

In the lab, adult learners explore the characteristics of different thermostats and the principles underlying the tools and materials needed to do the job. These involve the different types of motion and principles applicable to the basic linking functions. In a supervised team, the adults learn to handle the different tools and materials.

In the workshop, guided by the teacher, adult learners make sure that the safety measures mentioned in the instructions are followed. They formulate a plan including a work method and the list of necessary resources. This analysis also enables them to determine whether they can do the job or whether they need to ask for help. The thermostat is installed taking into account safety information and information about the tools and materials. The adult learners make sure that their results are consistent with the desired outcome and make the necessary adjustments. Finally, they put everything away and clean up.

Elements of the Course Addressed by the Learning Situation

Class of Situations	
Using everyday technologies at home	
Learning Situation	
Replacing a Thermostat	
Categories of Actions	
<ul style="list-style-type: none"> Studying a technical problem in the home Handling materials, tools, technical devices and household products safely Correcting an everyday problem requiring the use of technology 	
Operational Competencies	Essential Knowledge
<ul style="list-style-type: none"> Acts methodically Thinks logically 	<ul style="list-style-type: none"> Safety Properties and characteristics of materials Properties and characteristics of tools and technical devices Graphics
Complementary Resources	
<ul style="list-style-type: none"> Electrical circuit with a power supply panel, a mechanical thermostat and a heater Tools: pliers, wire strippers, screwdriver, multimeter Bracket, tape, connectors and screws 	<ul style="list-style-type: none"> Electronic thermostat Safety glasses Manufacturer's manuals and guides Pencil and paper



