

Course  
**CMP-5083-2**  
**Emerging Computer Applications**

**Computer Science**





## INTRODUCTION

The goal of the *Emerging Computer Applications* course is to stimulate the curiosity of adult learners, to encourage them to take initiative and to help them master an emerging computer technology.

In this course, adults learn to use computer tools to plan and deal with specific situations that involve applying a recent technological discovery or a technology newly accessible to the general public in areas such as telecommunications, virtual reality, voice recognition, language tools, robotics or home automation, or any other field in which emerging computer applications are found. This course focuses mainly on the context leading to the discovery of a new application and the concepts involved. Adult learners explore the environment of an emerging computer application and make sure they understand how its tools and commands work. They carry out a project in which they identify a situation where the application is used and correctly use the tools and commands of the required application. At each step in their process, adult learners evaluate their work and determine the improvements to be made and the means of doing so.

By the end of this course, adult learners will be able to analyze and understand the context that led to the emergence of a new application. They will be able to identify the main concepts of the application and understand how it is used in various situations. They will be able to implement its main tools and will be able to carry out a project in which they will correctly use the tools and commands of the application selected.

## SUBJECT-SPECIFIC COMPETENCIES

This course targets the following subject-specific competencies:

- *Interacts in a computer environment*
- *Produces computerized documents*

Thus, it is by activating and integrating these two subject-specific competencies and by using other resources that adults are able to effectively structure their learning.

During the learning situations, adult learners communicate using a human-machine interface and evaluate their efficiency in using a computer environment. They carefully plan their work and adapt their plan as they work. As they carry out a project and upon its completion, they evaluate their efficiency and make any necessary adjustments.

## PROCESSES AND STRATEGIES

As they learn about computers, adult learners are called upon to use various processes and strategies. These processes and strategies represent the way in which adults go about solving problems, meeting challenges and, in general, carrying out their learning activities.

For the *Emerging Computer Applications* course, the suggested approach is the familiarization process.

Familiarization process	
<ul style="list-style-type: none"> <li>• This process involves becoming familiar with the basics of a computer application.</li> <li>• Adult learners familiarize themselves with the main concepts and develop an overall understanding of the application.</li> <li>• The goal of this process is not to be able to produce documents quickly, efficiently and without errors, but rather to understand as clearly as possible the logic behind the application.</li> </ul>	
<p><b>Examples of strategies</b></p>	<ul style="list-style-type: none"> <li>- Selecting the keyboard input language</li> <li>- Determining the necessary resources</li> <li>- Adhering to the plan</li> <li>- Making adjustments to the plan as they work</li> <li>- Determining the improvements to be made and the means of doing so</li> </ul>

To meet the requirements of the familiarization process, adult learners take stock of what they already know and try to apply that knowledge to the object or situation they are learning about. Their plan must therefore be flexible and include help resources so that adult learners can make adjustments throughout the process.

## CROSS-CURRICULAR COMPETENCIES

The cross-curricular competencies are not developed in a vacuum; they are rooted in learning situations and contribute, to varying degrees, to the development of the subject-specific competencies, and vice versa.

Several cross-curricular competencies can be useful in dealing with the learning situations in the *Emerging Computer Applications* course. Two are considered particularly relevant to this course: *Uses information* and *Adopts effective work methods*.

### ▪ Intellectual Competency

In order to deal effectively with specific situations in which an emerging application is used, adults learn to *use information*. They do so when they gather the documentation and resources they will need to learn and to carry out a project.

### ▪ **Methodological Competency**

To deal effectively with a specific situation in the *Emerging Computer Applications* course, adult learners must *adopt effective work methods*. They consult the documentation available, get an idea of the desired result and learn to use the interface while evaluating their efficiency. This preliminary step allows them to analyze the situation, organize their ideas, determine the necessary resources and draw up a work schedule. As they carry out their project, adult learners follow their plan and make adjustments to it as needed.

## SUBJECT-SPECIFIC CONTENT

The subject-specific content consists of knowledge and cultural references. The prescribed content for this course is outlined below. However, depending on the context (e.g. if certain tools or functions are not available in a given software program), other equivalent content may be substituted for that outlined below.

## KNOWLEDGE

- ***Context associated with a specific situation that involves using a recent technological discovery or a computer technology newly accessible to the general public***
  - Context before the emergence of the computer application
  - Advantages and disadvantages of the emerging computer application
  - Socioeconomic impact (environment, labour market, business opportunities)
- ***Concepts involved in dealing with specific situations***
  - Main concepts, objects and properties of objects
  - Functions and procedures
  - Input and output
- ***Understanding the commands and functions required for the project***
  - Determining the possibilities of the application
  - Identifying the commands and functions required for a project
  - Using the documentation and resources required for a project
- ***Dealing with specific situations***
  - Using the tools and commands and, if applicable, creating and modifying objects
  - Reviewing the product or process
  - If applicable, disseminating the final product

## CULTURAL REFERENCES

The following cultural references will help adults understand some of the factors that influenced the development of computer science. These references give a cultural dimension to instruction, expand the adult learners' knowledge and make their learning meaningful. The teacher, with input from adult learners, may choose other references that are more appropriate to the task at hand.

- ***Events and chronology***
  - Portrayal of technology in science fiction films
  - Present and future uses of new information and communications technologies (NICT)
  - From science fiction to reality (cell phones, CD-ROM, etc.)
  - History of the development of an innovation
- ***Heritage objects***
  - Use of new applications by the military
  - Non-military uses of military applications (the Internet, GPS, etc.)
- ***Regional or national references***
  - Employers
  - Anecdotes
  - School-related elements

## FAMILIES OF LEARNING SITUATIONS

The goal of the *Emerging Computer Applications* course is to stimulate the curiosity of adult learners, to encourage them to take initiative and to help them master an emerging computer technology. This course gives adult learners the opportunity to perform actions that will enable them to interact in a computer environment and produce quality computerized documents.

The shaded cells in the table below provide specifics about the contexts in which the prescribed families of learning situations are applied in this course.

Subject-specific competencies	Families of learning situations related to . . .		
	Information	Creation	Critical thinking
<b>Interacts in a computer environment</b>	Interacts by interpreting signals he/she receives and using input and output peripherals	Discovers what computers can do by consulting documentation and by experimenting	Critically examines computerized communication tools by applying evaluation criteria
<b>Produces computerized documents</b>	Communicates by using computerized services	Creates by correctly using the appropriate functions	Evaluates his/her work by setting quality standards
<b>Adopts behaviours that reflect a concern for ethics, safety and critical thinking</b>	Communicates respectfully, using the conventions of a given medium	Acts prudently by adopting safe behaviours	Validates information by using validation criteria

First, adult learners interact by interpreting signals they receive and using input and output peripherals, in particular to take action. Then, they discover what computers can do by consulting documentation and by experimenting. For example, they may determine what is feasible or choose the right tool to carry out a project.

Then, they create documents by correctly using the appropriate functions in order to work more efficiently and become more versatile, among other things.

## BROAD AREAS OF LEARNING

The broad areas of learning deal with major contemporary issues. Ideally, the situations to be studied should be selected in keeping with the educational aims of the broad areas of learning since these areas of learning provide a broader context for the learning situations and thus serve to make learning more meaningful. Two broad areas of learning are considered particularly relevant to this course: Career Planning and Entrepreneurship, and Citizenship and Community Life.

- **Career Planning and Entrepreneurship**

By developing computer competencies, adult learners increase their overall employability. Thus, a learning situation that makes adult learners aware of the fact that emerging computer applications often present new business opportunities meets the educational aim of the BAL Career Planning and Entrepreneurship.

## ▪ Citizenship and Community Life

The Computer Science program gives adult learners the opportunity to experience the principles that are the basis of equal rights in our society. A learning situation that helps adult learners measure the impact of the changes resulting from the emerging application as they relate to the possibilities for creating or reorganizing communities meets the educational aim of the BAL Citizenship and Community Life.

### EXAMPLE OF A LEARNING SITUATION

All learning situations, no matter what broad area of learning is targeted, place adult learners at the heart of the action. Learning situations promote the development of subject-specific and cross-curricular competencies, the acquisition of computer knowledge and skills and the mobilization of various resources that are useful in carrying out the tasks at hand.

The table below shows the elements that need to be considered when developing a learning situation and highlights those selected for the learning activity described on the following page.

ELEMENTS REQUIRED IN LEARNING SITUATIONS	
<b>Broad area of learning</b> (targeted) - Contextualizes learning to make learning more meaningful	<ul style="list-style-type: none"> <li>• Career Planning and Entrepreneurship</li> </ul>
<b>Subject-specific competencies</b> (prescribed) - Are developed in action and require the active participation of adult learners	<ul style="list-style-type: none"> <li>• Interacts in a computer environment</li> <li>• Produces computerized documents</li> </ul>
<b>Families of learning situations</b> (prescribed) - Group together situations appropriate to the course, based on issues drawn from reality - Promote the acquisition of computer knowledge and skills	<ul style="list-style-type: none"> <li>• Information               <ul style="list-style-type: none"> <li>○ Interacts by interpreting signals he/she receives and using input and output peripherals</li> </ul> </li> <li>• <b>Creation</b> <ul style="list-style-type: none"> <li>○ Discovers what computers can do by consulting documentation and by experimenting</li> <li>○ Creates by correctly using the appropriate functions</li> </ul> </li> </ul>
<b>Cross-curricular competencies</b> (targeted) - Are developed in context together with the subject-specific competencies	<ul style="list-style-type: none"> <li>• Uses information</li> <li>• Adopts effective work methods</li> </ul>
<b>Knowledge</b> (prescribed) - Includes computer knowledge and skills that adult learners must acquire in the course	<ul style="list-style-type: none"> <li>• Planning how to deal with specific situations</li> <li>• Dealing with specific situations: approach to consider</li> <li>• Planning and dealing with specific situations involving the use of an emerging computer application</li> </ul>



This section provides an example of a learning activity. It includes a context that serves as a common thread throughout the activity; however, it is not formally spelled out. Although they may not be explicit, the learning situation includes the elements identified in the previous table: the broad area of learning, the subject-specific competencies, the families of learning situations, the cross-curricular competencies and the prescribed knowledge. To promote learning, these elements must be structured in a coherent and meaningful way.

Teachers can target any element as a focus of learning, be it actions related to the subject-specific or the cross-curricular competencies or the prescribed knowledge that adults must acquire.

### EXAMPLE OF A LEARNING SITUATION

#### Voice recognition

**Task:** Test a voice recognition program

The teacher suggests that adult learners experiment with a voice recognition program so that they can discover its uses in business and other sectors. In this activity, adult learners will discover that the program leaves no room for error and that recognition rates depend on two basic rules: clear articulation and no hesitation.

To prepare for the activity, adult learners are asked to consult the documentation provided and familiarize themselves with the program's tools and commands. They begin their experimentation by recording a personal list of words and then test the program out. They compile their results on an observation checklist and make adjustments to their word list, if necessary.

Since the familiarization process is suggested for this course, adult learners use the means at their disposal to construct their knowledge: the documentation provided, planning, communication with peers (when the situation permits), and reflection and review. They carry out the activity using the tools and commands available. They plan their work in advance and analyze their results at each step, adjusting their approach based on their needs.

### END-OF-COURSE OUTCOMES

When adult learners *discover what computers can do*, they become familiar with the main concepts of the emerging application by consulting available software documentation, tutorials and guides. They search the Internet for information that may help them. They explore the capabilities of the application they have chosen, learn about the context that led to its emergence, and consider its advantages and disadvantages as well as its socioeconomic impact on the environment, the job market and business opportunities.

When adult learners *interact*, they interpret the messages and signals of the application and use the input and output peripherals appropriately. They validate their understanding of the concepts involved in dealing with specific situations, objects and properties of objects, functions and procedures, and input and output.

When adult learners *create*, they choose a work method that is suitable for their project and adopt an appropriate approach. They plan the necessary resources, break the work down into steps and draw up a work schedule. They use the tools, commands and functions of the application and process the signals received. If applicable, they create or modify objects. They analyze their results in order to determine the improvements to be made and the means of doing so.

Throughout the learning process, adult learners develop competence in the following computer knowledge and skills: they identify the objectives of the task to be carried out, interact, interpret signals, and use the basic tools of an emerging application. In addition, they do not hesitate to consult various resources to obtain help when difficulties arise.

## **EVALUATION CRITERIA**

### ***Interacts in a computer environment***

- Accurate interpretation of messages and signals
- Use of appropriate strategies to interact and to troubleshoot

### ***Produces computerized documents***

- Thorough planning of the work
- Appropriate formatting based on document type
- Application of appropriate tools and functions