

Program development: Technical Training

Program Design and Development Guide

Ministerial portion of the program-specific component

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Formation professionnelle et technique
et formation continue

Direction générale des programmes
et du développement

This document is based on work begun in the mid-1970s, in particular the work of Jean Dussault and the guides produced by Anne Filion, Jean-Paul Lemieux, Guy Mercure and Manon Paquette. These guides have been adapted and updated to take into account current program development methods in vocational and technical training.

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INTRODUCTION

The *Program Design and Development Guide* is intended to help those who develop technical training programs to define the competencies and goals of the proposed training plan, validate the training plan and establish the objectives, standards and other components of the program of study. It includes the definitions, information and tools needed to develop technical training programs using the competency-based approach.

The competency-based approach is based on well-known theories and models described in specialized literature in the field of education. It has been tested and refined over the years as part of the program development process in Québec, and has been the basis for the development and revision of vocational and technical training programs since the reforms of 1986 and 1993.

Technical training programs are aimed at providing students with the competencies they need to enter the job market, practise a trade or occupation and continue to develop their occupational skills throughout their careers. It is also aimed at meeting the need for a skilled work force. Although the term “competency” can mean many things, the vocational and technical training sector of the Ministère de l'Éducation defines it as the ability to act successfully and evolve in order to adequately perform work-related tasks and activities based on an organized body of knowledge, skills in a variety of fields, perceptions, attitudes, etc.

A technical training program is made up of four components: three general education components and one program-specific component. The first general education component is common to all college-level programs, the second is specific to each program and the third complements the first two. Each component is made up of two parts: one developed by the Ministère and included in the *Technical Training Program*, the other developed by each of the institutions authorized to offer the program during the planning of teaching/learning activities. In this guide, the term “program” refers to the ministerial portion of the program-specific component.

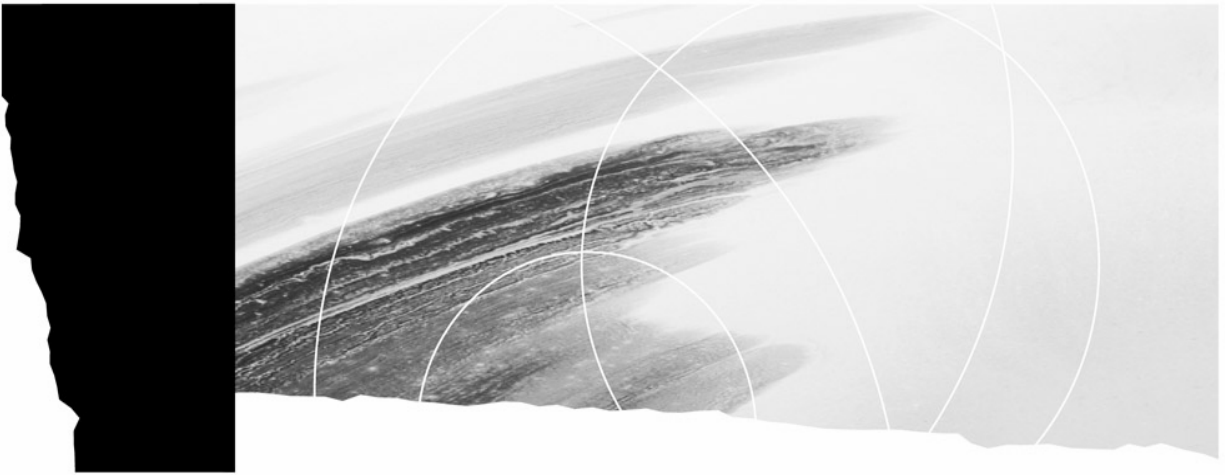
Program development is a step in a process that extends from an analysis of training needs to the follow-up of program implementation. This document deals with the design and development of programs of study, whose aim is to establish and formulate the competencies required to practise a trade or occupation on the basis of the job analysis, and to translate the resulting statements into objectives and standards in a program of study. All of these steps make it possible to define the components of a program in such a way that each element is based on the result of the previous step. Each of these steps is described in the following pages.

The first part of the document describes the proposed training plan and the main steps in its development, including its validation. It also contains criteria for its analysis and evaluation, as well as details on the presentation and validation meetings.

The second part describes the program of study. It explains the need for objectives and standards and their respective components, and the rules governing their establishment and formulation. It also includes criteria for analyzing and evaluating the program. Finally, it addresses the implementation of the program in the educational institutions.

In addition to excerpts from validation and update reports, the appendixes contain samples of each of the sections of a proposed training plan, as well as educational aims, objectives and standards. These samples are all taken from existing programs and reports. They have, however, been slightly modified to reflect the most recent requirements.

The different sections of the proposed training plan and program are presented in their final, published format.



Proposed Training Plan

Description

Design

Analysis

Validation

1

Description

The proposed training plan is the first step in the development of a technical training program. It provides the structure for the program and establishes its goals and competencies. The training plan serves as a tool for communicating with partners, particularly at the validation stage. It is also used as a reference document in the stages following the validation. It is divided into sections as illustrated in Appendixes I, II, III and IV. It contains administrative information, program goals, and competencies presented in a grid and a table of correspondence. The purpose and content of each of the sections is described below.

1.1 Approach

Proposed training plans are developed using a competency-based approach. In vocational and technical training, this approach essentially consists in defining the competencies inherent in the practice of a trade or occupation and formulating them as objectives and standards in a program of study.¹ Thus, competencies are the main learning targets. This approach contributes to the harmonization of vocational and technical training programs and to the quality of training offered in educational institutions. It also promotes better training-employment correlation.

Training plans are based on the general goals of technical training, which reflect the overall expected outcomes. These goals are themselves based on the aims of technical training and take into account the orientations of college education as well as ministry orientations in vocational and technical training. The general goals of technical training are:²

- To help students develop effectiveness in the practice of a trade or occupation.
- To help students integrate into the work force.
- To foster students' personal development and acquisition of occupational knowledge, skills, perceptions and attitudes.
- To promote job mobility.

Generally speaking, programs are based on an analysis of training needs, the purpose of which is:

- To ensure consistency within and between the levels of instruction through sectoral studies and the harmonization of programs.
- To establish the need to develop or revise a program using preliminary studies or, if necessary, other types of needs analysis.
- To determine the competencies to be acquired in the program, in particular on the basis of the job analysis.

1 Québec, Ministère de l'Éducation, *Vocational and Technical Education in Québec: A System Integrating Educational and Management Engineering* (Québec: Ministère de l'Éducation, 2002), p. 48.

2 Appendix II contains a more detailed version of the goals of technical training, as does the following document: Québec, Ministère de l'Éducation, *Élaboration des programmes d'études techniques : cadre général et technique* (Québec: Ministère de l'Éducation, 2002).

Both the Ministère and the educational institution develop their portions of the program using a program approach. The aim of this approach is to integrate competencies into a consistent and meaningful whole (the program) in order to promote their acquisition as students progress in their learning.

The program approach is characterized by an accurate, structured selection of elements essential to training; the mobilization of more general basic knowledge; and the knowledge, skills, perceptions and attitudes related to the practice of the trade or occupation and to an individual's vocational development (i.e. general and program-specific components).

Once the Ministère has established a unified, integrated and consistent series of objectives and standards for a given program, the educational institution rounds out the process by developing and implementing the related learning activities. Here, the approach requires a holistic view of education that goes beyond the field of learning and focuses on program consistency and the required knowledge, skills, perceptions and attitudes. It requires systematic planning, taking into account the different players involved in the development and implementation of the program with a view to endowing the program with as much meaning as possible and making the best choices.

At the end of the program, the Ministère requires that the educational institution administer a comprehensive examination in order to ensure that the program is truly based on an integrated set of competencies. This comprehensive examination is prepared by the educational institution and ensures that the competencies contained in the program are presented in an organized, consistent and meaningful manner.

1.2 Development

The development process may vary considerably from one proposed training plan to another but, generally speaking, it involves a number of steps, several of which can be carried out simultaneously, and each of which provides part of the final product.

- Determine the competencies to be included in the proposed training plan. In general, this is done using one of two approaches. The most common, the systemic approach, consists in outlining specific competencies using trade-related tasks, and in inferring general competencies based on the information contained in the other sections of the job analysis report. A more systematic approach involves identifying the knowledge, skills, perceptions and attitudes required for all of the tasks and operations defined in the job analysis workshop and then grouping them together.

In either approach, once this information has been gathered, the statements and details of the competencies are formulated according to specific rules and assigned the appropriate taxonomic level. Then, correlations are established between the competencies and the job analysis report, the general goals of technical training and, in certain cases, other determinants. The result is the preliminary table of correspondence.

- Determine the correlations between general and specific competencies. The result is the preliminary grid of competencies.
- Estimate the duration of training for each competency in order to ensure the feasibility of the training plan given the total number of hours of instruction allotted and revise the statements and details of the competencies. The results are the revised table of correspondence and grid of competencies.
- Formulate the program goals and revise the entire training plan. The result is a proposed training plan ready for validation.

2

Design

The first step in designing a proposed training plan is to examine the initial determinants, in particular those specific to the trade or occupation. The necessary information is available in the job analysis report. More general information can be found in the needs analysis, which describes the trade or occupation and the major trends in its development. The general goals of technical training, which are also determinants, are combined with the program goals and should also be reflected in the competencies of the proposed training plan. Finally, other determinants may include the characteristics of the students, quantitative work force needs and ministry or government orientations.

It is important that the training plan be based on the job analysis report and other studies. An in-depth understanding of the trade or occupation, as well as of its conditions, requirements and foreseeable development, is indispensable in establishing the competencies to be included in the program of study.

2.1 Goals of the Program-Specific Component

The first section of the training plan, immediately following the administrative information (see Appendix I), deals with the goals of the program-specific component. It is often easier to formulate the program goals last, after the other sections of the training plan have been written.

The goals of the program-specific component reflect the specific orientations of the program of study, as well as the orientations of technical training, and include the desired outcome at the end of the program and a general description of the trade or occupation in question.

The goals of the program-specific component clearly state the aim of the program: “The (*program title*) program prepares students to practise the trade or occupation of (*trade or occupation*).” The general description of the trade or occupation is a summary of work-related tasks. It also describes the principal sectors of activity in which the trade or occupation is practised, the different technical or technological tools used, the main responsibilities of the practitioner and, if applicable, the fields of activity concerned. The goals of the program-specific component also relate the four general goals of technical training to the trade or occupation in question. The Ministère de l'Éducation, in collaboration with its socioeconomic partners, has decided to emphasize two of these general goals. On the one hand, all programs must focus on familiarizing students with the job market in general and the context surrounding the trade or occupation they have chosen. On the other hand, programs leading to trades or occupations in which graduates can start their own business, alone or in conjunction with partners, must also promote entrepreneurship. Appendix II contains an excerpt of the goals of the program-specific component.

The next section of the training plan contains a list of competencies. There are two types of competencies in technical training: specific and general. Specific competencies deal directly with the performance of tasks and development in a work context; they focus on the achievement of the first general goal of technical training, i.e. to help students develop effectiveness in the practice of a trade or occupation. General competencies add another dimension to the proposed training plan. Not specific to the trade or occupation in question, they correspond rather to broader activities that extend beyond specific tasks, while contributing to their performance. They are transferable, promote versatility and, in particular, should facilitate the achievement of three of the general goals of technical training:

- To help students integrate into the work force.

- To foster students' personal development and acquisition of occupational knowledge, skills, perceptions and attitudes.
- To promote job mobility.

2.2 Competencies

The expertise of the team members involved in designing the training plan (representatives employed in the field and in education) will help in identifying the tasks and work-related activities to be included in specific or general competencies.

Specific competencies

A specific competency is closely related to one or more occupational tasks. A preliminary analysis of the information gathered in the job analysis workshop should make it possible to identify the tasks to be translated into specific competencies. Specific competencies should reflect some or all of the characteristics of the tasks, correspond to important aspects of the trade or occupation, describe the expected outcomes and help identify the main responsibilities of the practitioner. The results should be observable and measurable.

Analyzing work organization³ often provides a good indication of work-related tasks. It provides information on how tasks are distributed among practitioners of a given trade or occupation and, in general, on the manner in which goods are produced or services delivered. It also makes it possible to identify relatively complete tasks that are independent of one another and are meaningful to the trade or occupation.

It is important, however, not to confuse work organization with work process. Generally speaking, the work process is a series of operations that a person carries out to perform a task; for a given trade or occupation, this process recurs in most tasks. Its elements are usually more clearly defined and, insofar as they correspond to steps in a process, they are often interdependent. Although the table of tasks in the job analysis report may be based on a general work process, from an educational standpoint, the competencies should not replicate the work process. If they do, it will be necessary to review the way in which the tasks are presented and to establish a structure based on the products or services of a given trade or occupation.

The tasks as they appear in the job analysis report seldom correspond perfectly to statements of specific competencies. The tasks should therefore be reviewed so that the competencies can be formulated as accurately as possible with respect to the situation in which the trade or occupation is practised. This implies a certain amount of verification and adaptation. Also, it is important that the competencies meet certain criteria and requirements (see Section 2.3). The following are examples of statements of specific competencies:

- Perform ultrasound tests.
- Work with people in crisis situations.
- Prepare an advertising plan.
- Make mouth protectors.
- Repair eyeglasses.

See Section 2.5 and Appendix IV for a table of correspondence illustrating the relationships between specific competencies and tasks.

3 Work organization (among individuals, the definition of tasks and responsibilities, conditions, etc.) is characterized according to the values, objectives and choices a company makes regarding the production of goods and the delivery of services depending on its physical, human and financial environment.

General competencies

While specific competencies are largely based on the tasks involved in the trade or occupation, general competencies require an analysis of all the information contained in the job analysis report (e.g. tasks, performance conditions, skills, behaviours) in order to identify work-related activities. For our purposes, an activity is a set of coordinated actions extending beyond the specific scope of a task and involving procedures or products that take into account the important dimensions of a person's job or career.

In other words, work-related activities extend beyond mere tasks. The procedures or products to which they correspond are transferable and can therefore be applied to a variety of tasks.

Characteristics and purpose

While remaining closely related to the tasks of the trade or occupation, general competencies should correspond to work-related activities surrounding the tasks. These activities require more basic learning and are transferable to a variety of work situations. One of the main purposes of general competencies is to avoid training that is limited to the performance of tasks related to a specific trade or occupation. General competencies should allow students to integrate the principles and concepts underlying work-related tasks, so that they can adapt to a variety of situations and contexts. Since they extend beyond the simple performance of tasks, general competencies promote autonomy and versatility, and allow students to eventually exert a certain influence in the workplace. For example, "To establish a helping relationship" is not a task performed by social workers, but a work-related activity that is useful in performing a variety of tasks. Important work-related activities are translated into general competencies.

General competencies should focus on important aspects of the trade or occupation and its foreseeable development, which are not taken into consideration in the specific competencies. Although their scope extends beyond that of specific competencies, like their specific counterparts, general competencies should correspond to actual work situations and lead to observable and measurable results.

Definition

The general competencies should cover every important work-related activity. In order to identify these activities, it is necessary to consult the "skills and behaviours" section of the job analysis report, which deals with areas such as communication, management, human relations, professional conduct, laws and regulations, the arts, science and technology, and languages and literature.

Activities can often be identified when analyzing the overlap between tasks, skills and behaviours in the job analysis report. The following is a partial list of typical work-related activities that could be translated into general competencies:

- Make choices.
- Establish relationships between phenomena.
- Observe, analyze and assess situations.
- Carry out work-related activities.
- Establish interpersonal or working relationships.
- Solve problems.
- Design and create a product.
- Make decisions.
- Prevent certain situations.

- Visualize a phenomenon or an object in time and space.
- Perceive more or less apparent sensory phenomena or sensitive or intellectual realities.

In the case of cognitive competencies, the activities to be performed in a given situation may be directly related to a specific subject area. For example, the application of scientific concepts or principles can be useful or necessary in the practice of a trade or occupation. In such a case, although the subject area in question will need to be specified in order to clarify the objective, it will be important to focus on the work-related activity while avoiding a strictly subject-related perspective. Once the main activities have been identified, each one will be associated with an actual work situation in order to clearly define the competency to be acquired. The elements of the competency should clarify, describe or characterize the action or activity.

Typical activities	Activities in actual work situations
Assess situations	Assess the potential and limitations of distribution methods
Analyze relationships	Analyze the relationships between methods of infection and methods of preventing and controlling microbes
Establish interpersonal or working relationships	Establish a helping relationship with a person in mourning
Design and create a product	Design visual communications projects
Make choices	Communicate using colours

The following are examples of statements of general competencies:

- Deal with a delinquent suffering from a mental disorder.
- Communicate with clients.
- Control the quality of manufactured goods.
- Consider their actions with respect to the application of legal measures.
- Manage the stress inherent in police work.

2.3 Statements of the Competencies

Each competency should be unique and refer to a single integrated set of distinct skills, knowledge, perceptions, attitudes and behaviours. Although a skill or behaviour may be included in more than one competency, each set must be unique. One way of formulating a competency and its components is to consider what the graduate will have to do, rather than know, upon entering the job market.⁴ Also, the statements of the competencies must meet the following two conditions: they must comply with occupational and training requirements, and they must respect taxonomic levels and the rules of formulation.

Occupational requirements ensure that the competencies correctly describe the trade or occupation and that they are appropriate. Training requirements promote the recognition of prior learning and the development of programs of study and ensure that the scope of the competencies is appropriate.

4 The competencies in a technical training program are always defined in terms of job market entry-level requirements, which include all of the competencies normally required to practise a trade or occupation correctly. Although training is not limited to the competencies required of a beginner, competencies related to specializations and those that extend beyond the usual standards for the occupation in question are excluded. Thus, entry-level requirements indicate the level of performance required in the execution of tasks and work-related activities of a person starting out in the occupation in which he or she was trained.

Occupational requirements

Each competency should be meaningful, important and representative of the trade or occupation, corresponding to an aspect of the trade or occupation or its foreseeable development that is easily described by anyone who is familiar with it. It should lead to the production of a specific good or the delivery of a specific service, or to verifiable products or procedures whose effects are observable and measurable. Each competency should be well defined and relatively independent, in order to prevent overlap and repetition. It should have a clear beginning and end, and aim to achieve specific results. If the competencies are not unique, they should be reformulated. Each one should be able to stand alone, limited in time and in scope.

Each specific competency should reflect an actual work situation, that is, it should correspond to the practice of the trade or occupation. A competency cannot simply encompass a set of knowledge, skills, perceptions and attitudes, although these may be required to practise the trade or occupation. The formulation⁵ of each competency should reflect the level of complexity of the task or activity and correspond precisely to the level of difficulty of the work situation in question and the degree of responsibility involved. Also, each competency should be multidimensional, requiring the investment of certain knowledge, skills, perceptions and attitudes.

The structure of the specific competencies should reflect the organization of work, whether or not it is formally recognized in a company. In other words, each task or activity, while independent, should be part of a broader set of tasks and activities and fit in with its counterparts.

Training requirements

The scope of the competencies has an important impact on training. By definition, competencies are closely related to the tasks and work-related activities they allow graduates to perform. The scope of a competency is a function of the extent, relative importance and complexity of the related task or activity. The scope of the task or activity can lead to a revision of the related competency.

Competencies should provide the appropriate guidelines for training and include all the appropriate elements in a clear and accurate statement. The desired scope of a competency is defined by the possibilities it allows of highlighting the main aspects and dimensions of the trade or occupation in the proposed training plan.

- If the scope of the task or activity is too broad, it will be impossible to accurately identify the competency to be acquired. Competencies that are too broad are, by definition, less accurate and can gloss over important elements. They provide incomplete information for planning and organizing training.
- Conversely, if a task or activity is too restricted, it will be difficult to define the competency. Competencies that are too limited tend to break learning down and decrease the potential for synthesis and integration. Also, they tend to multiply the objects of certification, making the evaluation process unwieldy and more difficult to organize. The tasks and activities must therefore be grouped together, although artificial groupings should be avoided. Competencies should above all correspond to actual work situations.

The scope of the competencies should also promote the harmonization of vocational and technical training programs. The harmonization of programs is based on a comparison of competencies, which is always easier when the programs themselves are clear and precise. This requires competencies that are neither too broad nor too limited.

- Competencies that are too broad decrease the potential for harmonizing programs. In general, only parts of competencies are recognized as being similar.

5 The taxonomic level of the statement of the competency reflects this degree of complexity, hence the importance of ensuring that the competency is appropriately classified and that it reflects the actual work situation.

- Competencies that are too limited and too numerous create confusion by multiplying learning focuses, which are then difficult to integrate.

Another reason to avoid competencies that are too broad or too limited is to facilitate the recognition of prior learning. Indeed, competencies include sufficient meaningful and qualifying reference points to allow for the recognition of a variety of scholastic or experiential learning acquired in any number of settings.

- Competencies that are too broad and too few make it difficult to recognize prior learning. There is usually little correlation between overly broad competencies and the generally more specific and precise competencies acquired through experience in the workplace.
- On the other hand, competencies that are too limited and too numerous tend to unduly multiply the number of objects of certification, also making the recognition of prior learning more difficult.

At first glance, there may seem to be little relationship between the scope of competencies and the degree of flexibility at the instructional level. There is no rule against breaking down a broad competency into smaller elements or grouping limited competencies together in different ways. However, this type of manipulation may result in disjointed competencies or artificial groupings. We can no longer speak of an approach where competencies truly determine training if the competencies lose their role as visible targets that orient learning. After too much manipulation, competencies can lose their integrating function and meaning, representing only a tenuous link between the school and the workplace. The scope of the competencies should therefore be somewhere in between in order to ensure that they maintain their status as principal learning targets.

Rules of formulation and taxonomic levels

From a technical point of view, the statement of the competency should be consistent with the rules of formulation and the appropriate taxonomic level. It should be concise and explicit and made up of an infinitive describing the action to be performed and a direct object specifying the expected outcome (good or service). The choice of verb is based on recognized taxonomies (e.g. cognitive, psychomotor and affective domains).

In Bloom's taxonomy of the cognitive domain,⁶ for example, the action verb used should correspond to one of the following levels:

- Application, i.e. the use of knowledge, skills, perceptions and attitudes in specific, concrete situations. For example: choose, organize, use.
- Analysis, i.e. the breaking down of a whole into its component parts so as to clarify organizational structure and relationships. For example: analyze, specify, determine.
- Synthesis, i.e. the integration of elements or parts to form a new whole. For example: produce, create, modify, plan, develop, synthesize.
- Evaluation, i.e. internal or external assessment. For example: evaluate, judge, validate, appraise, standardize.

Quantitative guidelines

Coherent, applicable training plans involving 1 500 to 2 000 hours of instruction⁷ should include between 20 and 25 program-specific competencies. There is no strict rule governing the number of specific competencies with respect to the number of general competencies; however, generally speaking, there are usually slightly fewer specific competencies than general competencies in technical training.

As we saw earlier, the number and scope of the competencies are closely related, as are the number of tasks and activities and their scope. Therefore, a competency should require an estimated minimum of

6 Examples of taxonomies can be found in: Renald Legendre, *Dictionnaire actuel de l'éducation*, 2nd ed. (Montréal: Guérin, 1993).

7 Duration of the program-specific component.

45 hours of instruction to meet educational institutions' requirement for feasibility. The maximum duration should not exceed 150 hours per competency, since too broad a scope makes it more difficult to identify all of the qualifying elements and certification possibilities, and to take into account missing components of learning. The estimated number of hours of instruction needed to acquire a competency should always be a multiple of 15. Also, the total duration of a program must comply with orientations. Finally, in order to ensure the feasibility of the total number of hours of instruction, the estimated number of hours required to develop each of the competencies is taken into account in the development of the grid of competencies.

2.4 Grid of Competencies

The grid of competencies is used more than once in the program development process. When the competencies are being established, it is used as an instrument for analysis, synthesis and reflection, and promotes the coherence of the proposed training plan by offering a systemic view. It also presents the development team's choices with respect to the relationships between the general and specific competencies. The grid can ensure coherent instructional organization by arranging the competencies in an organized structure established by the development team. The grid is provided for information purposes only. It offers an integrated and meaningful view of the competencies to be acquired, thereby ensuring the coherence inherent in the program approach.

The grid of competencies is a double-entry table. The specific competencies appear on the vertical axis and the general competencies, on the horizontal axis. It also provides an estimate of the hours of instruction required to develop each of the competencies in the program-specific component. These estimates are intended only for the purpose of calculating teaching costs and are not published. As a result, the development team must produce a second version of the grid of competencies, to be included in the proposed training plan and, later, in the program itself.

Finally, the grid shows the relationships between the competencies, which are represented by circles (○). These symbols indicate relationships between tasks (specific competencies) and work-related activities (general competencies) in an actual work situation. The grid also makes it possible to see, at a glance, the relationships between the competencies on each of the axes. It provides an overview of the proposed training plan, demonstrating its coherence and feasibility. It can be used by educational institutions in the development of learning activities. Finally, it is the only tool that indicates whether competencies are general or specific. The scope of these two types of competencies has an impact on the educational aims of the training plan and on the learning activities to be developed.

Production

At this stage, the production of the grid of competencies generally involves the following steps, many of which can be carried out simultaneously:

- Indicate the title of the program in the space provided.
- From top to bottom on the vertical axis, list the statements of the specific competencies, in order of complexity or in the order in which they will be exercised in the workplace.
- From left to right on the horizontal axis, list the statements of the general competencies in the program-specific component, in order of complexity.
- Establish the correlations between the general and specific competencies. A correlation (○) between a general competency and a specific competency indicates that the general competency is a prerequisite for the application of the specific competency.
- Number the general competencies in the program-specific component and the specific competencies in a manner that takes into account the correlations between the general and specific competencies and the integration of learning.
- Determine the number of hours of instruction needed to acquire each of the competencies. Although the number of hours of instruction is not set by the Minister, it must be estimated so that the development team can determine the relative importance of the competencies and get a better idea of the feasibility of the training plan. The total number of hours of instruction allotted to each of the

competencies in the program-specific component should obviously correspond to the total number of hours authorized. However, since the number of hours is not set by the Minister, this information does not appear in the grid of competencies included in the training plan. It can, however, be recorded in the version of the grid used by the development team.

Once all of these steps have been completed, the grid of competencies should resemble the following:

GRID OF COMPETENCIES										
TITLE	Number	GENERAL COMPETENCIES								
		Statement of General Competency "AA"	Statement of General Competency "BB"	Statement of General Competency "CC"	Statement of General Competency "DD"	Statement of General Competency "EE"	Statement of General Competency "FF"	Statement of General Competency "GG"	Statement of General Competency "HH"	
SPECIFIC COMPETENCIES	Number	1	2	3	4	5	7	8	9	
Statement of Specific Competency "A"	6	○	○	○		○				
Statement of Specific Competency "B"	10	○	○	○		○	○		○	
Statement of Specific Competency "C"	11	○	○	○	○	○	○	○	○	

2.5 Table of Correspondence

The table of correspondence is used to establish and verify the correlation between the training needs⁸ expressed in the job analysis report and the means of meeting the needs presented in the proposed training plan. More specifically, the table of correspondence makes it possible to visualize the relationships between the competencies included in the training plan on the one hand and the information contained in the job analysis report (tasks, operations, skills and general behaviours) and any other determinants on the other. It must therefore be possible to relate each competency to at least one task, operation, skill or behaviour described in the job analysis report, as well as to a general goal of technical training. Relationships are also established between each competency and the general goals of technical training and any ministry or government orientations, in order to ensure that they are taken into account in the proposed training plan.

Because of its structure, the table of correspondence also makes it possible to include details about the content of the competencies throughout the process. The table of correspondence is therefore a written record of the information processed during the development of the proposed training plan. In addition to helping the development team establish the competencies and formulate the objectives and standards, the table of correspondence is essential for validating the proposed training plan. It demonstrates the relevance of the competencies and provides details about the content, scope and limits of each one. These details, which appear in the second column, are formulated according to the same rules as the competencies, i.e. using an action verb and a direct object, making it possible to pinpoint the expected action and level of responsibility without specifying the content of future objectives and standards.

⁸ There are two major types of training needs: socioeconomic development needs and the personal development needs of practitioners.

It is therefore recommended to take notes during discussions regarding the competencies and to record these notes in the table of correspondence. Finally, by illustrating the relationships between training needs and the program of study, the table of correspondence makes it easier to make changes reflecting job market developments or other needs. Appendix IV contains a sample table of correspondence.

3

Analysis

Before addressing the validation stage, let us examine a few criteria for analyzing the proposed training plan. The following table contains questions that might help the development team take a critical look at its work. Taking the necessary measures to be able to answer each of these questions in the affirmative will result in a better product. Having someone who was not involved in the development process check the training plan against these criteria will provide additional input.

Analysis Checklist

GOALS OF THE PROGRAM-SPECIFIC COMPONENT

- Is the expected outcome clear?
- Is the general description of the trade or occupation clear and sufficiently detailed?
- Do the goals of the program-specific content relate to the general goals of technical training?

COMPETENCIES

Determinants

- Do the competencies cover all of the important dimensions of the trade or occupation?
- Do the competencies take into account the aims and orientations of technical training?
- Do the competencies take into account the needs identified in the planning studies and the information gathered during the job analysis workshop?
- Do the competencies take into account the other determinants?

Characteristics of each competency

- Is the competency multidimensional?
- Does the competency correspond to a sufficiently important task or activity?
- Does the competency reflect the scope of the corresponding task or work-related activity?
- Does the number of hours devoted to the competency fall within standards?
- Does the targeted level of complexity correspond to the level required to practise the trade or occupation?
- Does the verb used correspond at least to the “application” level in Bloom’s taxonomy?
- Does each competency target different results?
- Does the competency represent an actual task or activity rather than a grouping of several unrelated activities?

Statement of each competency

- Is the statement of the competency explicit?
- Is the statement of the competency unequivocal?
- Is the statement of the competency made up of an action verb and a direct object?
- Does the statement of the competency comply with standards in that it contains no qualifiers, adverbs or performance conditions?

Type of competency

- Does each specific competency relate to a specific task?
- Does each general competency relate to a work-related activity?
- Can each general competency be transferred to more than one specific competency?

Analysis Checklist (cont.)

GRID OF COMPETENCIES

- Does the grid of competencies contain a balanced number of specific and general competencies?
- Are there between 20 and 25 competencies, the usual number found in technical training programs?
- Does the total number of hours correspond to the authorized duration?
- Are the relationships between the general and specific competencies appropriate?

TABLE OF CORRESPONDENCE

- Does the table of correspondence contain a statement and details of each competency?
- Are the details of the competency formulated using an action verb and a direct object?
- Are the relationships between the competencies and the determinants clear and accurate?

FORMAT

- Does the proposed training plan contain all of the necessary sections (administrative information, goals of the program-specific component, list of competencies, grid of competencies with introduction, table of correspondence with introduction)?
-

4

Validation

The proposed training plan is validated immediately after it is developed and just before the program's objectives and standards are formulated. During this stage, representatives employed in the field and in education are consulted. This is a key moment in the program development process and a valuable source of information for the Ministère and its partners, since adjustments can then be made to the training plan.

Participants' comments are recorded in a validation report, which must include general remarks concerning the relevance, coherence and feasibility of the proposed training plan, as well as specific remarks about the relevance, coherence and feasibility of the program goals and competencies. The validation report is distributed to everyone present at the meeting, but is not published.

4.1 Goals of the Validation Process

According to the frameworks for developing vocational and technical training programs, ministry programs, if they are to adequately serve their purpose and meet requirements, must have four characteristics: they must be relevant, coherent, applicable and harmonized. At the validation stage, the development team seeks opinions on three of these characteristics—relevance, coherence and feasibility—and informs partners about the possible harmonization of the competencies with those of other programs. These opinions are provided by representatives employed in the field and in education, ideally grouped together in a joint committee.

The relevance of the competencies in the proposed training plan is evaluated by people employed in the field. Their opinions are based on the fact that each competency should relate to the work situation and usually take one of two forms: a judgment as to whether the competency is used in the trade or occupation, and additional specifications concerning the limits of the competency with respect to other occupations and compliance with current laws and regulations (limits of professional responsibility).

The coherence and feasibility of the proposed training plan are evaluated by people employed in education. Opinions concerning coherence cover several aspects: the order in which the competencies are presented with respect to the complexity of learning, the relationships between the general and specific competencies, and the distinctiveness of the content of each competency. Opinions concerning feasibility usually cover three aspects: the time needed to acquire the competencies, the material and financial resources needed to teach them and the professional development needs of teachers. It must be feasible to develop all of the competencies contained in the proposed training plan in the number of hours of instruction allotted.

Matters concerning professional development and material resources must be dealt with in such a way as to allow educational institutions enough leeway to develop the appropriate learning activities. Any difficulties foreseen by representatives of these institutions should be taken into account.

Validating a proposed training plan provides many advantages: it is essential for the formulation of objectives and standards, it makes it possible to reach a consensus on fundamental issues, and it ensures the transparency of the process. Finally, it provides the Ministère's partners with information, thereby helping to establish the credibility of future programs of study.

4.2 Presentation and Validation Meetings

Meetings

There are two types of meetings involved in validating a proposed training plan: a presentation meeting and the actual validation meeting. These meetings can take one or two days depending, for example, on the number of institutions authorized to offer the program or the number of competencies in the training plan.

If a large number of institutions are involved, a preliminary presentation meeting may be held before the validation meeting. This is necessary because the validation committee comprises representatives employed in the field as well as in education and, for logistical reasons, there is a limit to the number of people who can participate in the validation meeting. The aim of the presentation meeting is to ensure that all of the educational institutions in question are informed about the proposed training plan.

Other training plans, in particular those that are required for certain specializations, include too many competencies to reasonably cover in a single day. In such a case, it is recommended that the validation meeting be extended. In all cases, the person in charge of the proposed training plan is responsible for determining how long the meetings should be.

One-day validation meeting			
Purpose	Participants	Duration	Opinions and comments recorded
Information	Representatives employed in the field and in education	90 minutes at most ⁹	None
Presentation	Representatives employed in the field and in education	About 6 hours	Relevance – Coherence – Feasibility General comments about the proposed training plan Comments about goals

Validation meeting preceded by a presentation meeting for representatives of educational institutions			
Day 1			
Purpose	Participants	Duration	Opinions and comments recorded
Presentation	Representatives employed in education	1 day	None
Day 2			
Purpose	Participants	Duration	Opinions and comments recorded
Presentation	Representatives employed in the field	90 minutes at most	None
Validation	Representatives employed in the field and in education	About 6 hours	Relevance – Coherence – Feasibility General comments about the proposed training plan Comments about goals

⁹ These durations are provided for information purposes only; they may vary depending on the context, the number of competencies in the proposed training plan, etc.

Composition of the validation committee

The person in charge of the proposed training plan is responsible for setting up the validation committee, in accordance with the partnership guidelines set by the Ministère. In addition to the members of the development team, approximately 16 other people participate in the validation meeting:

- Half the group is employed in education (e.g. institution administrators, teachers, other professionals, if applicable).
- The other half is employed in the field (e.g. job analysis workshop participants; managers; supervisors; personnel managers; representatives of professional corporations, interested organizations and ministries, and sectoral committees).

Representation must be balanced in terms of the regions of Québec and the socioeconomic situation of the trade or occupation in question. The criteria are often similar to the ones used to select participants for the job analysis workshop, but other criteria may apply depending on the specific situation and needs:

- The group is made up of people from different industrial sectors or businesses; small, medium-sized and large businesses should all be represented.
- The group includes people from the different regions in which the trade or occupation is practised (cities, towns, remote areas).
- The composition of the group takes into account the fact that some occupations are practised in several fields of activity (e.g. services, manufacturing, distribution, product development, sales) and that not all tasks are necessarily performed by the same person.

Obviously, to limit the number of participants, each individual should meet several of these criteria. Once the members have been recruited, the person in charge of the proposed training plan sends out official invitations, accompanied by a copy of the training plan and any other documents deemed appropriate (usually the job analysis report).

Composition and role of the development team

Generally speaking, the development team is made up of the person in charge of the proposed training plan, a teaching specialist in charge of design and development and a program development specialist. The program development specialist works closely with the person in charge of design and development. A specialist employed in the field may also join the team at key points in the design of the proposed training plan, including the validation stage. The person in charge of the training plan may be a program development specialist.

Once the participants have confirmed their attendance, the development team prepares the presentation and validation meetings.¹⁰

The presentation meeting involves three tasks: presenting a summary of the work done to date, introducing the proposed training plan and facilitating the meeting. The validation meeting involves four tasks: presenting each of the competencies in the training plan and the goals of the program, facilitating the meeting, moderating the discussion and gathering information.

The teaching specialist should present the proposed training plan, since he or she is the one who is responsible for most of the design and development. The program development specialist often takes over the facilitation or, more specifically, the moderation of the meeting, ensuring that everyone has chance to express an opinion or ask questions. He or she also assists the teaching specialist in presenting the training plan and answering questions related to methodology. The meeting is chaired by the person in charge of the proposed training plan, who usually presents the summary of the work done to date. At the validation stage, he or she ensures that the meeting's objectives are met and requests

¹⁰ Practically speaking, everything must be done to ensure the success of this stage in the consultation process. The meetings must be held at a location that is easily accessible at little cost to those who will be attending. The room must be appropriately quiet and comfortable, and the tables must be arranged in such a way as to facilitate discussion. Overhead projectors and flip charts are extremely useful. Name cards and additional copies of the proposed training plan should be provided.

corrective action if necessary. Finally, he or she assigns someone to take notes or shares the task with the other members of the team.

4.3 Implementation

Presentation meeting

The duration of the presentation meeting varies depending on whether it is held the same day as the validation meeting or in the weeks preceding it (the meetings should be fairly close together). However, the objectives of the meeting are the same regardless: to inform participants of the work that has been done to date, present the highlights of the planning studies and job analysis report, report on the development orientations, briefly explain the competency-based approach and, finally, present the proposed training plan. The presentation meeting also includes a question period and an explanation of the validation procedure. Each member of the development team will have been assigned a specific role and have prepared his or her presentation and the necessary materials.

Each presentation meeting has its own requirements but, as a general rule, the focus should be on the presentation of the proposed training plan and, in particular, on the table of correspondence and the determinants rather than on technical information about the ministerial frameworks for program development. It is essential that participants be made aware that the presentation meeting is not a validation meeting and that any comments related to relevance, coherence or feasibility will not be recorded. The members of the development team must make sure that the presentation and validation meetings remain distinct.

Finally, it is important that the representatives of educational institutions understand the structure of the grid of competencies so that they can evaluate the coherence and feasibility of the proposed training plan. The development team must present the grid and clearly distinguish between the responsibilities of the Ministère and those of the educational institutions in order to forestall opinions about learning activities which, although relevant with respect to the institutions' implementation of the program, should not be dealt with at the ministry level.

Validation meeting

The validation meeting usually lasts one day, including about an hour and a half devoted to the presentation of the proposed training plan, so there is little time to deal with questions about the competencies and to gather general comments on the training plan and on the goals of the program-specific component. The facilitator should therefore be an experienced moderator.

It is important to explain the objectives of the meeting from the outset, clarifying the concepts of relevance, coherence and feasibility. It is therefore necessary to specify the responsibilities of the representatives employed in the field (opinions on the relevance of the proposed training plan) and in education (opinions on its coherence and feasibility). Participants should be informed that there is much to do and asked to limit their speaking time. It is important to emphasize the fact that the facilitator will act as moderator. The moderator must use facilitation techniques conducive to the creation of effective group dynamics and emphasize that participants should not address questions related to learning activities, since these are the responsibility of the educational institutions.

- The first step is to examine the competencies in the order in which they are presented in the proposed training plan. A competency is presented and participants comment on its relevance.¹¹ If the competency is deemed relevant, the participants comment on its coherence and feasibility, then offer suggestions. The facilitator should remain flexible until the participants get used to the procedure. The teaching specialist must be given enough time to present each competency and allowed to answer any request for clarification.

11 In the case of training plans for programs leading to certain specializations, the validation of competencies common to two or more specializations is part of assessing relevance and requires a distinct judgment for each of the specializations in question.

- As much as possible, the goal is to reach a consensus on the issues of relevance and limits of professional responsibility. Participants should not waste time discussing the program development process. Similarly, lengthy discussions about the best term to use should also be avoided.
- Finally, the facilitator should avoid making decisions on the spot in order to preserve the consultative character of the meeting and allow the development team the time needed to reflect on any changes to be made to the training plan. Finally, there is no need to spend time defending the training plan, since the objective of the meeting is to gather as many opinions as possible from participants, not to obtain their approval.

4.4 Results

Validation report

The validation report contains a clear, succinct account of the opinions and comments of participants at the validation meeting. It should differentiate between input from representatives employed in the field and from those employed in education.

The report should also indicate which opinions on important issues, such as limits of professional responsibility or the feasibility of the proposed training plan, were given by representatives of professional corporations or administrators of educational institutions.

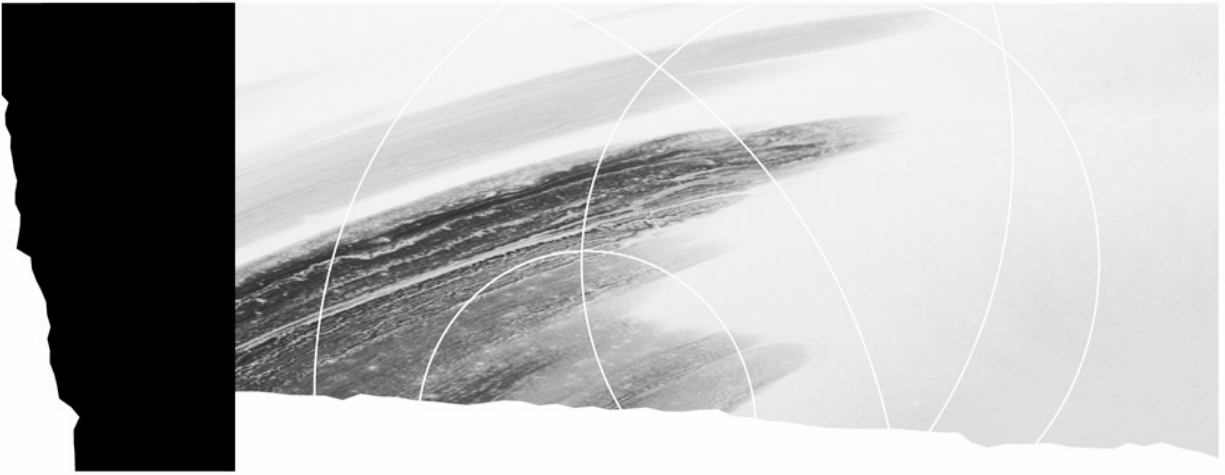
The report should also mention when a consensus was reached or when opinions about important issues diverged, without interpreting the participants' comments or mentioning the decision made subsequently. An analysis of the comments and suggestions will allow the program development team to evaluate the content, impact and relevance of the suggested changes.

Unlike the job analysis report, the validation report is not examined for compliance. It is distributed to those who participated in the validation meeting, as well as to the directors of the educational institutions authorized to offer the program. Appendix V contains an excerpt of a validation report.

Decisions based on the opinions and comments gathered

Since the goal of the validation process is to gather opinions and comments about the proposed training plan, once the report has been issued, the development team must decide how to act on these comments and opinions. As a general rule, any consensus concerning relevance must be taken into account, while opinions regarding coherence and feasibility are taken into consideration as much as possible.

Occasionally, the person in charge of the proposed training plan may decide to produce an update report on the decisions made (see Appendix VI) for internal use. This report is usually accompanied by an updated version of the training plan and is not distributed to participants in the validation meeting. Such a report may be produced only once the program has been written, since the definition of objectives and standards often results in changes to parts of the training plan. The update report summarizes all the choices made by the development team throughout the program development process.



Program of Study

Description

Objectives

Standards

Analysis

Implementation

5

Description

A technical training program is a coherent set of competencies to be acquired, formulated in terms of objectives and standards. It is designed according to an overall approach that takes into account factors such as training needs, the job situation, goals and means of achieving objectives. As we saw earlier, it follows a framework for development that requires the participation of representatives employed in the field and in education.

5.1 Function and Structure

The program of study is a teaching/learning reference tool. Its objectives and standards describe the expected outcomes of the training and have a direct influence on the choice of teaching/learning activities. It does not, however, contain learning activities, course content or teaching strategies or methods, which are the responsibility of the educational institutions.

The program is also a reference tool for instructional organization. Its implementation in educational institutions requires the mobilization of human, financial and material resources in line with the requirements of the program.

The program is also a reference tool for the evaluation of learning and the recognition of prior learning. To obtain a diploma, students must demonstrate that they have acquired the competencies described in the objectives and standards. The instruments used in the evaluation of learning and the recognition of prior learning are based on the objectives and standards.

Since the competencies formulated as objectives and standards are mandatory targets of the program of study, students must acquire all of these competencies to obtain a diploma. The program is therefore a reference tool for the certification of studies. It allows educational institutions, which are responsible for implementing the program, to guarantee that all students receive comparable training.

Finally, the program of study is an exhaustive source of information about the competencies required to practise a trade or occupation at entry level on the job market.

The program of study is a prescriptive ministerial document made up of different parts. First, it presents a synoptic table of information about each of the competencies. Then, it is divided into two parts: one containing the general education components, the other, the program-specific component. Both parts include an overview, followed by objectives and standards. More specifically, the program-specific component includes four sections: the goals of the program-specific component, the educational aims of the program-specific component, the list of competencies and the grid of competencies.

5.2 Goals and Educational Aims of the Program-Specific Component

The goals of the program-specific component are established in the proposed training plan and validated by representatives employed in the field and in education. Since program development is a dynamic process, the statements of the competencies and the goals of the program-specific component are likely to change, even once the training plan has been established. These changes, of course, must respect the rules of formulation. This part of the program of study contains an updated version of the goals of the program-specific component, originally formulated in the training plan.

The second section of the program-specific component lists the educational aims, which help guide educational institutions in implementing the program. The educational aims are based on important values and concerns and serve as guidelines for teaching/learning activities. They usually address important dimensions of personal and vocational development that have not been explicitly included in the goals of the program-specific component or in the competencies. They may include important attitudes, work habits, intellectual skills and so on. The program-specific component usually contains between three and six educational aims.

The educational aims point teachers in a given direction when appropriate. They are ongoing and, in particular, help the students develop habits, attitudes and other dimensions not dealt with in the program's objectives. The educational aims should be established at the end of the program development process. The following are a few examples of educational aims of the program-specific component:

- Develop a sense of responsibility.
- Develop a concern for a job well done.
- Develop the habit of self-evaluation.
- Show more respect for themselves and others.

Appendix VII contains other examples of educational aims.

5.3 Objectives and Standards

The purpose of objectives and standards, which are set by the Minister, is to guarantee that all students receive comparable training despite the fact that learning activities are defined by the educational institutions. The scope and limits of the objectives and standards are the result of shared responsibility between the Ministère and educational institutions.

The objectives and standards reflect the expected outcomes. The objectives specify the competencies to be acquired, and the standards illustrate the performance requirements and conditions at entry level on the job market. Each objective is accompanied by a standard.

The formulation of the objectives and standards is intended to convey all of the essential elements of the competencies and to express them as observable and measurable behaviours. Relevant information is selected in accordance with the competency in question. The aim is to isolate the information related to the competency to be formulated as an objective and standard and to select the most meaningful and relevant parts, while bearing in mind the overall trade or occupation, thereby specifying the scope and limits of the competency.

The objective and standard must also be formulated in such a way as to convey the competency in question as clearly as possible. The formulation involves the description of the expected actions and outcomes. It is important to avoid focusing on the field of knowledge or discipline, and to bear in mind the functional level of the competency, i.e. the level required to practise the trade or occupation, and its relationship with the other competencies in the program.

The following pages address objectives and standards in greater detail. Examples can be found in Appendix VIII.

6

Objectives

The objective presents the competency to be acquired. It includes the statement of the competency and the information needed to understand it. Objectives and standards are inseparable: an objective cannot be defined without taking into account the context in which the competency will be exercised and the necessary performance criteria.

6.1 Statement of the Competency

When the objectives and standards are being formulated, the statements of the competencies are already available, since they were included in the validated and updated training plan. The statements of the competencies should be the same as those that appear in the training plan.

6.2 Elements of the Competency

The elements of the competency describe the competency in terms of specific behaviours. They are limited to the information needed to understand the competency, describing either the major steps in its application or the main aspects of the competency.

The steps involved in exercising a competency establish a sequence of actions and results. This method should be used for specific competencies and for certain general competencies. The following example, “To engage in social research,” from the *Social Service* program, illustrates this method. The elements of the competency are:

- To define a research goal specific to an intervention context.
- To prepare to gather data.
- To share data-gathering and data-processing tasks.
- To gather and process data.
- To analyze the results.
- To draft a status report.

In some cases, for example, when general competencies cannot be unequivocally explained by the major steps in their application, the main components of the competency are presented instead. In such a case, it is necessary to group together the skills in question. The following example, “To analyze links between social problems, social policies and social interventions,” again from the *Social Service* program, illustrates this method. The elements of the competency are:

- To examine social problems.
- To analyze the relationships between social policies and social problems.
- To analyze the relationships between social interventions and social problems.
- To examine the relationships between social policies and social interventions.

The formulation of the elements of the competency may take into account relationships with other competencies that should be exercised in the context of a work-related task or activity. These

relationships may give rise to the elements of the competency; it is important, however, to adapt them to the competency in question when formulating them.

Each element of the competency should correspond to a sufficiently important and complex action; elements that are too specific should be avoided.

- In the cognitive domain, elements of the competency are expressed in terms of the application of knowledge, for example:
 - Select tools and materials.
- In the psychosensorimotor and socioaffective domains, they are expressed in terms of self-contained actions, for example:
 - Adjust the parts of a mechanism.
 - Manage work-related stress.

Like the statement of the competency, the elements of the competency are formulated using action verbs expressing observable and measurable behaviours or outcomes, and a direct object. Elements corresponding to actions that are too simple, for example “name,” “describe,” “list,” should be systematically avoided. These actions involve the expression rather than the application of knowledge and often do not represent an actual work-related task or activity. The elements should correspond to sufficiently complex and important actions.

Finally, the elements of the competency should not refer to a learning sequence or learning steps. They should take into account the performance requirements at entry level on the job market. Generally speaking, between three and nine elements are necessary to adequately describe a competency.

The information about tasks and operations, expected goods and services and transferable skills that was gathered during the job analysis may prove useful in establishing the elements of the competency. The same is true for the details of the competency that appear in the second column of the table of correspondence¹² in the validated and updated training plan.

¹² Appendix IV contains a sample table of correspondence.

7

Standards

A standard is the level of performance at which an objective is considered to be achieved. It includes the achievement context and performance criteria. The achievement context corresponds to the situation in which the competency is exercised at entry level on the job market. The performance criteria define requirements for the application of the competency. The achievement context and performance criteria therefore define the level of performance at which an objective is said to be attained.

7.1 Achievement Context

The achievement context provides information about the situation in which the competency is exercised at entry level on the job market, that is, the first time a person performs a work-related task or activity on the job. It makes it possible to determine and understand the competency's scope, importance and field of application. It helps set the limits of the competency and establish its degree of complexity. It indicates, on the basis of the information contained in the job analysis report, the equipment, materials, references and tools used, as well as the standards and regulations in effect. It also specifies typical situations and the degree of autonomy and responsibility required. It must be representative of the different workplaces in which the competency will be exercised and provide information that will remain valid in the long term.

The achievement context should not express the teaching/learning situation or the performance criteria. The educational institutions are responsible for creating the necessary instructional means and conditions for the achievement of the objective in accordance with the standard.

The achievement context contains information such as:¹³

- Specific instructions, for example:
 - Using laws, regulations and procedures
 - Using the mandates, policies and codes of ethics of agencies or organizations
 - Based on a service plan and file
- The context in which the competency is to be exercised, for example:
 - At the office or in the family's home
- The necessary tools, equipment or materials, for example:
 - Using computer-based tools
 - Using information and communication technologies
- The necessary reference materials, for example:
 - Using directories and policies and codes of ethics of agencies and organizations
 - Using relevant documentation
 - Using statistics, directories and research reports
- The scope and limits of the competency, for example:
 - Based on situations of social injustice or difficulty accessing services
 - With individuals of all ages needing protection and with young offenders
 - Based on requests for services or requests for intervention made by individuals, groups or communities

Information about performance conditions gathered during the job analysis may prove useful in establishing the achievement context.

¹³ The following examples are taken from the *Social Service* program.

7.2 Performance Criteria

The performance criteria define the requirements for judging the achievement of each element of the competency and, consequently, of the competency itself. Each element of the competency refers to at least one performance criterion. All of the performance criteria must be met, as must the achievement context, if the standard is to be achieved.

The performance criteria qualify the elements of the competency with respect to the skills and behaviours demonstrated. They express the minimum requirements for the application of the competency at entry level on the job market. Many of these requirements are indicated in the job analysis report.

Performance criteria can qualify the procedure used in exercising the competency, or the finished products or outcomes obtained as a result. The criteria, defined on the basis of information about the job, may deal with:

- the use of a method or technique
- the application or observance of rules, procedures, etc.
- the quality of the finished product or outcome
- the demonstration of specific attitudes or behaviours

Example:

Elements of the competency	Performance criteria
1. To describe the identifying characteristics of the social group.	• Clear description of the type and composition of the social group • Identification of the sociodemographic profile of the social group • Accurate description of the main aspects of the culture of the social group

Performance criteria should refer to observable aspects and therefore be measurable. The criteria established in the standard are not used to evaluate the competency, but rather to help educational institutions develop evaluation and teaching/learning instruments.

Performance criteria are usually formulated using nouns and adjectives. The nouns specify the points to be observed. The adjectives help determine the required performance. The number of criteria is usually limited to four or five for each element of the competency, so as to avoid complicating the objective and standard.

Performance criteria can be based on suggestions made in the job analysis workshop, for example, or on information about transferable skills.

8

Analysis

At this point, let us examine a few criteria for analyzing a draft of a technical training program.¹⁴ The following table contains questions that might help the development team take a critical look at its work. Taking the necessary measures to answer each of these questions in the affirmative will result in a better product.

Analysis Checklist

GENERAL ASPECTS

- Were the goals of the program-specific component changed to take into account the opinions gathered?
- Do the educational aims address important aspects that were not explicitly formulated in the goals of the program-specific component or the competencies?
- Are there between three and six educational aims?
- Does the information in the grid of competencies correspond to the information in the objectives and standards?

OBJECTIVES

Statements of the competencies

- Are the statements of the competencies formulated similarly in every section?

Elements of the competency

- Is each element related to the competency in question?
- Do the elements help define the scope of the competency?
- Is the scope of each element more limited than that of the statement of the competency?
- Are the elements structured as processes or products?
- Is the competency structured and written in such a way as to make it unequivocal?
- Is the information contained in the elements relevant to the trade or occupation, without specifying learning activities or required knowledge?
- Do the elements represent actual steps in a work-related activity rather than learning activities or knowledge leading to the acquisition of the competency?
- Are the elements formulated using an action verb and a direct object, without qualifiers, adverbs or achievement requirements?
- Is the verb different from the one used in the statement of the competency?
- Are there between three and nine elements of the competency?

STANDARDS

Achievement context

- Does the context specify the actual work environment, without referring to teaching, learning or evaluation methods?
- Does the context specify the necessary or mandatory environment, tools, equipment, materials and clothing, and references or technical manuals used in the application of the competency in the workplace?
- Is the context realistic with respect to job market entry-level requirements?
- Does the context help describe the competency beyond the information contained in the other components of the objective?
- Are the statements clear and accurate?
- Are the statements limited to the information needed to understand the scope and limits of the competency?
- Do the statements begin with words such as “given,” “using,” “in” and “for”?

¹⁴ A draft is a program that has not yet been approved by the Ministère.

Analysis Checklist (cont.)

Performance criteria

- Are the criteria directly related to the elements of the competency?
- Do the criteria indicate the quality of the products, outcomes or actions or the application or observance of a method rather than the learning to be acquired?
- Are the criteria realistic with respect to job market entry-level requirements?
- Are the criteria sufficiently broad to enable the future development of more specific measurable and observable evaluation criteria?
- Is each criterion unique?
- Are the criteria presented in a logical order?
- Are the criteria formulated using a noun and a meaningful adjective?
- Are there an appropriate number of criteria, at most four or five per element?

FORMAT

- Does the program contain all of the necessary sections: administrative information about the program, the introduction to the program, the general education and program-specific components (administrative code and list of objectives or competencies and credits), and glossary? Does the first part contain the goals, educational aims, objectives and standards of the general education components? Does the second part contain the goals, educational aims, objectives and standards of the program-specific component and a section on harmonization with other programs?
-

9

Implementation

At the end of the program development process, it is customary to hold a one-day implementation session during which the development team presents the new program to future users. Participants in the implementation session are usually teachers and education consultants employed in the educational institutions authorized to offer the program.

The implementation session is an ideal opportunity to inform participants of the specific characteristics of the new program and to answer questions. Above all, it is intended to help participants understand the program and to do the instructional planning necessary for its implementation.

The format of the session may vary depending on the program, the extent of the changes made and the number of educational institutions involved. If necessary, several sessions may be held consecutively in a given region. The content of the session, however, remains the same.

First, the development team presents the history of the program, the main stages in its development, and the major choices and significant changes made. It is important to remember that the participants have not been involved in every step of the program development process, so they should be informed about what has been done to date, for example, the preliminary study, the job analysis report and the validation report.

Then, the team reviews the basic concepts underlying the competency-based approach used in technical training. The objective is to ensure that the participants have all the information they need to understand each of the components of the new program and all the possibilities for its implementation.

Finally, the program is presented in detail, including the goals and educational aims of the program-specific component, the grid of competencies and each objective and standard. This information can be presented in a number of ways but, whatever the means chosen, the presentation should be dynamic and promote the involvement of participants. Reading the program in its entirety should be avoided, since that would only result in a tedious, non-interactive session.

CONCLUSION

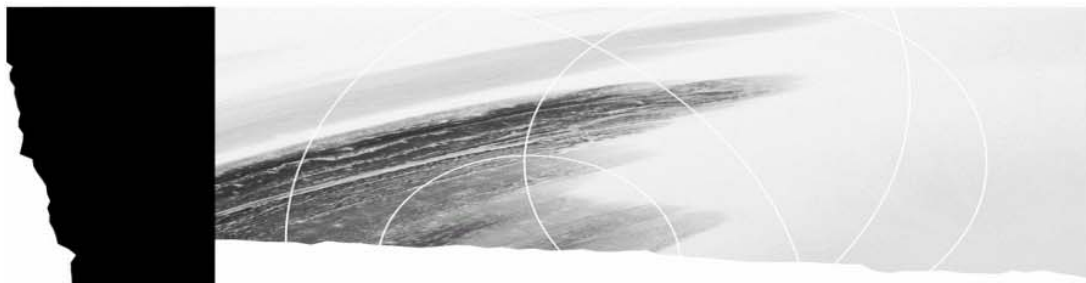
This guide was redone as part of the revision of the program development process in vocational and technical training. Such a revision was necessary in order to update the documentation and the programs developed since the reform of vocational training in 1986 and that of technical training in 1993.

The revised program development process in vocational and technical training involves three major stages: the program's evaluation; its planning and development; and its implementation, including the resulting sectoral follow-up. This ensures that work force and personal needs are being met. These stages are implemented in a continuum extending from a program's design through its implementation, if the need still exists. Each step is based on the previous step and paves the way for the next. The process begins with a needs analysis and the identification of the program's determinants. Then follows the development and implementation of the program and, finally, a study of the need for revision. The updated process is monitored on an ongoing basis by the sectors involved in order to ensure quality program offerings and training-employment correlation.

To date, more than 250 vocational and technical training programs have been developed using the competency-based approach, and some have been updated. In the coming years, many of the programs will be revised in order to meet needs and to ensure the principal qualities of a good program, i.e. coherence, relevance and feasibility, in as harmonized a context as possible.

Appendix I

Administrative Information



<No.>

<Program Title>

Certification: Diploma of College Studies
Number of credits: < > credits
Total duration: <nb> hours of instruction <or> <nb> to <nb>
 <hours of instruction>

General education components: 660 hours of instruction
 Program-specific component: <nb> hours of instruction
 <OR>
 General education components: 660 hours of instruction
 Program-specific component:
 Common core and <Specialization option A, <name>: <nb> hours of instruction
 Common core and <Specialization option B, <name>: <nb> hours of instruction

Maximum duration allotted to clinical instruction: <999> hours of instruction

Number of competencies in the program: <nb>

General education components: <nb>
 Program-specific component: <nb>

Conditions for admission:

To be admitted to the program, students must meet the general conditions for admission set out in section 2 of the *College Education Regulations*, as well as the following requirements, if applicable:

- <text>

Appendix II

Excerpt of the Goals of the Program-Specific Component

Goals of the Program-Specific Component

The *Social Service* program prepares students to practise the occupation of social service worker.

Social service workers are trained to work with individuals of all ages and with families, groups and communities experiencing various social problems. These problems, linked to living conditions and social inequality, often involve poverty, unemployment, family and spousal violence, adjustment difficulties, loss of autonomy, isolation, suicide and substance abuse. Social service workers help these individuals, families, groups and communities to meet their needs adequately, to defend their rights and to promote social change.

Social service workers work in agencies maintained by the Ministère de la Santé et des Services sociaux, such as local community service centres (known as CLSCs), hospitals, residential and long-term-care facilities, reception and rehabilitation centres, and youth protection agencies. They also work for the Ministère de l'Emploi et de la Solidarité du Québec and for various school boards. Social service workers are often employed by community organizations such as youth centres, community centres, shelters, self-help groups, advocacy groups and popular education groups.

Social service workers are often part of a multidisciplinary team and have autonomy as regards the method of intervention they use. Although the tasks assigned to social service workers vary depending on the setting, they have responsibility for selecting and applying specific types of intervention within the scope of the mission of the agency or organization that employs them.

The tasks performed by social service workers centre on working with individuals and families, and with groups and communities. The goals of intervention range from preventing the occurrence of problem situations to resolving problems by supporting individuals in a process of personal or collective change.

Lastly, maintaining individuals in their home environment or reintegrating them into society involves social service workers in the support and development of a wide range of resources and services. These services stem from a focus on social and community development.

The goals of the program-specific component of the *Social Service* program are based on the general goals of vocational and technical training. These goals are:

- To help students develop effectiveness in the practice of a trade or occupation, that is:
 - to teach students to perform roles, functions, tasks and activities associated with the trade or occupation upon entry into the job market
 - to prepare students to progress satisfactorily on the job (which implies having the necessary technical and technological knowledge and skills in such areas as communication, problem solving, decision making, ethics, health and safety)
- To help students integrate into the work force, that is:
 - to familiarize students with the job market in general and the context surrounding the occupation they have chosen
 - to familiarize students with their rights and responsibilities as workers
- To foster students' personal development and acquisition of occupational knowledge, skills, perceptions and attitudes, that is:
 - to help students develop their autonomy and the desire to learn, and acquire effective work methods
 - to help students understand the principles underlying the techniques and the technology used in the trade or occupation
 - to help students develop self-expression, creativity, initiative and entrepreneurial spirit
 - to help students adopt the attitudes required to successfully practise the trade or occupation, and instill in them a sense of responsibility and a concern for excellence

- To promote job mobility, that is:
 - to help students develop positive attitudes toward change
 - to help students develop the means to manage their careers by familiarizing them with entrepreneurship

Appendix III

Excerpt of a Grid of Competencies

Grid of Competencies

The grid of competencies provides an overview of a technical program. It brings together all of the components of a program and shows the relationship among the competencies.

The grid of competencies includes:

- the general competencies of the program-specific component, which deal with work-related activities common to various tasks or situations
- the specific competencies, which deal with tasks directly related to the practice of the trade or occupation

The grid of competencies shows the relationship between the general competencies on the horizontal axis and the specific competencies on the vertical axis. The symbol (○) indicates a correlation between a general and a specific competency.

The order in which the competencies are presented reflects the program's design; it does not dictate the course sequence. The grid of competencies is provided for information purposes only.

GRID OF COMPETENCIES												
Specific Competencies	Competency	General Competencies										
		To analyze the job function.	To communicate in the workplace.	To adopt a customer-oriented approach.	To process market-related information.	To supervise a group.	To impart techniques associated with a summer activity.	To determine the interpretive potential of an area based on natural heritage data.	To determine the interpretive potential of an area based on cultural heritage data.	To navigate in a natural environment.	To intervene in an emergency situation.	To impart techniques associated with a winter activity.
Competency		1	2	3	4	6	7	8	9	11	12	15
To plan and develop an excursion in a natural environment.	5	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
To carry out an interpretive activity associated with adventure tourism.	10	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
To coordinate food-preparation activities in the field.	13	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
To coordinate camping-related activities in the field.	14	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
To maintain equipment.	16	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
To maintain sites and trails.	17	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
To guide a group in a natural environment.	18	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
To use a second language in guiding a group in a natural environment.	19	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
To participate in developing adventure tourism products.	20	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
To participate in promoting the company and its products.	21	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Appendix IV

Table of Correspondence

Presentation of the Table of Correspondence

The table of correspondence contains information about the proposed training plan, including the competencies as they appear in the grid and in the order in which they should be acquired.

Each statement of the competency is related to the other competencies in the proposed training plan, the information in the job analysis report (*Rapport d'analyse de situation de travail* or *AST*) and the four general goals of technical training. These determinants are presented so as to ensure the relevance of each of the competencies. The information from the job analysis report is preceded by the letters *AST*. The general goals are numbered and correspond to those listed at the beginning of this document.

Each competency is also accompanied by details intended to clarify the statement. It is important to remember, however, that these indications are merely a preliminary guide to help define the competency and are not necessarily exhaustive. They may refer to related content, concepts related to the development of the competency or elements of the competency. They should not automatically be associated with the elements of the competency, which will be defined when the program objectives and standards are set.

Table of Correspondence

Statement of the Competency

11. Examine the atomic structure of matter.

Determinants

AST: Application of knowledge of physics (p. 33)

Goals: 1, 4

Details of the Competency

- Interpret the periodic table of elements.
 - Describe the properties of chemical bonds.
 - Identify the effects of chemical bonds on the macroscopic properties of matter.
-

Statement of the Competency

12. Describe a wave, a component or an apparatus using guided optics setups.

Determinants

AST: Tasks 3, 7; Application of knowledge of physics (p. 33); Decision-making skills (p. 36)

Goals: 1, 2

Details of the Competency

- Interpret the operating principle of the setup using the principles of physics.
 - Select the elements of the setup.
 - Assemble and align the elements of the setup.
 - Apply the method of measurement.
 - Describe the optical guided wave or the guided optics component or apparatus.
 - Interpret the behaviour of the optical guided wave or the guided optics component or apparatus using the principles of physics.
 - Present the results.
-

Statement of the Competency

13. Analyze the effects of temperature.

Determinants

AST: Task 7 ; Application of knowledge of physics
(p. 33)

Goals: 1, 3, 4

Details of the Competency

- Describe the thermal system to be analyzed.
 - Determine the temperatures of the elements of the system.
 - Determine the thermal radiation of the elements of the system.
 - Determine the heat flux between the elements of the system.
 - Determine the thermal expansion of the elements of the system.
 - Interpret the effects of temperature on the elements of the system using the principles of physics.
 - Present the results.
-

Appendix V

Excerpt of a Validation Report

General comments

The representatives employed in the field deplored the lack of practicums in the proposed training plan for *Business Management*. They emphasized the need for practicums to ensure that graduates are able to perform effectively as soon as they enter the job market. According to these representatives, the current program is far too theoretical and does not prepare students to perform work-related tasks.

The coordinator of the *Administration, Commerce and Computer Technology* sector explained that the proposed training plan could not include practicums since responsibilities are shared by the different partners; the Ministère de l'Éducation is responsible for defining the program objectives, while the educational institutions are responsible for developing learning activities (e.g. teaching/learning strategies, course content).

According to some participants, the new program title is ambiguous and employers may have difficulty identifying it as corresponding to the occupation in question. Also, they believe it emphasizes business to the detriment of industry. Some would like to see the term “marketing” used, since it corresponds more closely to the skills needed to practise the occupation. Finally, other participants suggested the following titles: Business and Industrial Management, Sales Management and Marketing Management.

The teachers attending the meeting reiterated the fact that they were there as teachers and not as representatives of their educational institutions.

The following abbreviations will be used in the next two sections to indicate the source of the specific comments about the program goals and the competencies:

- F → Representatives employed in the field
- E → Representatives employed in education
- D → Development team

Specific comments about the program goals

After having read the general description of the occupation, the participants commented on the profile of the business management technician.

- F “Self-employment” is not mentioned and should be addressed in the description of the occupation.
- E Some participants find “first level of responsibility” too limiting. In their opinion, training in business management should allow graduates to work as managers, supervisors of sales teams and to manage their own businesses, which is considered a higher level.

Specific comments about the competencies

1. Analyze the job function.

- F Participants consider this competency is relevant and very interesting.
- E Participants agree with the competency.

2. Communicate and interact in a business management context.

- F Participants consider this competency essential and believe that it covers the different aspects involved in communicating with clients and superiors.

Business Management

Translator’s note: Since validation reports are never published, they are not normally translated into English. The following text, however, will give readers an idea of their content.

- F Participants consider this competency essential and believe that it covers the different aspects involved in communicating with clients and superiors.
 - E Participants find this competency coherent. There is considerable content and the psychological aspects are very interesting. There is, however, some concern about instructional materials, which they believe are inadequate or nonexistent.
 - F Participants mention that there is some material available from trade associations. Also, companies could help teachers develop instructional materials.
- 3. Use legal references applicable to marketing activities.**
- F Participants consider this competency extremely relevant considering that legal references are used every day in businesses.
 - E Participants consider that this competency covers too much content for the 45 hours allotted.
- 4. Use application software.**
- F Participants consider this competency extremely relevant considering that computer technology is becoming an increasingly important aspect of business.
 - E Participants suggest adding “in a marketing context” so that the competency is acquired under actual workplace conditions.
 - D The development team points out that when the competency is translated into an objective and a standard, the standard will specify the context in which the competency is to be applied.
- 5. Use statistical methods to analyze business data.**
- F Participants consider this competency extremely important. They suggest that it be expressed as follows: “Use sources of statistical information and interpret data,” since they find some aspects of the competency too demanding.
 - E Participants note that the content of the competency corresponds to part of a statistics course currently being offered and that it is an important prerequisite for technicians wishing to go on to university.
 - F Participants emphasize that self-employed workers must do calculations and that the competency should be retained as presented.
- 6. Communicate in French in a business management context.**
- F Participants consider this competency essential given the importance of French in the business community in Québec. They question whether French courses should be required in technical training.
 - E Participants point out that French courses are given in the general education component and that the students’ proficiency is assessed at registration. They point out, however, that there is no such assessment when students register for “Business French” in the program-specific component. They also question the need for instruction in a third language.

Appendix VI

Excerpt of an Update Report

Changes made to the proposed training plan

Considering the opinions and comments gathered, the development team made changes to the proposed training plan.

The major changes are as follows:

- Changes were made to the program goals with respect to the description of the occupation. These changes appear in bold in the updated version.
- The order of the competencies was changed because it is important for students to acquire marketing skills before promotional and sales skills. The grid of competencies that follows takes these changes into account.
- Statements 4, 10, 17 and 20 have been changed to give a better indication of the expected outcomes of these competencies. These statements appear in bold in the table of correspondence.
- Details of the competencies have been added, moved or replaced to better reflect the tasks performed by business management technicians. These changes appear in bold in the table of correspondence.

The development team has decided, however, to retain the proposed program title since it covers all of the activities carried out in the different settings.

The following pages contain an updated version of the proposed training plan.

Translator's note: Since validation reports are never published, they are not normally translated into English. The following text, however, will give readers an idea of their content.

Appendix VII

Excerpt of the Educational Aims of the Program-Specific Component

Educational Aims of the Program-Specific Component

Educational aims are based on important values and concerns and serve as guidelines for interactions with students. As a general rule, educational aims focus on important aspects of the students' professional and personal development, such as attitudes, work habits and intellectual skills, which have not been explicitly formulated in the program's goals, objectives and standards.

The following is a description of the aims of the program-specific component of the *Adventure Tourism* program.

The program reconciles two requirements: versatility and the acquisition of skills needed to carry out tasks at an acceptable level for entry into the job market. Versatility is assured through the acquisition of general competencies that enable students to process market-related information, to communicate effectively in the workplace, to meet customer needs, to supervise groups, to impart techniques associated with various activities, to identify the interpretive potential of a given area, to navigate in natural environments, and to intervene in an emergency situation. The skills needed to carry out job-related tasks may be acquired through competencies specific to this program.

The program-specific component of this program also aims to help students develop the habit of developing sound relationships with customers, ensuring their safety, and of taking into account a variety of needs when accomplishing their work-related tasks, as these can affect all or some of the activities of an adventure tourism provider.

Translator's Note: The following text, however, will give readers an idea of their content.

Appendix VIII

Objectives and Standards

Code: 035Z

Objective

Standard

Statement of the Competency

Achievement Context

To navigate in a natural environment.

- Using relevant reference materials, topographical and bathymetric maps with different scales, a compass, and a global positioning system
- With groups of six to ten people
- During an excursion in a natural environment

Elements of the Competency

Performance Criteria

1. Plot a route on a map.

- Accurate determination of coordinates:
 - departure and return points
 - campsites
 - emergency exits
- Accurate calculation of the:
 - main azimuths (bearings) on route
 - azimuths of emergency exit points
 - elevations
 - depth of waterways
 - tides
 - distances between route segments
- Accurate assessment of:
 - hazards
 - travel time needed for the route

2. Travel on land and water using instruments.

- Accurate positioning on map of key topographical features
- Accurate determination of their position with respect to planned route
- Accurate determination of azimuth in order to proceed to the next point on the route
- Proper use of maps, instruments and techniques for moving forward
- Accurate assessment of hazards

3. Travel on land and water without instruments.

- Accurate determination of cardinal points using appropriate technique
- Accurate estimate of their position with respect to planned route
- Accurate determination of azimuth in order to proceed to the next point on the route
- Proper use of techniques for moving forward
- Accurate assessment of hazards

4. Find their way when lost.

- Prompt admission of being lost
- Accurate assessment of time lapsed since last known point on route
- Proper use of maps, instruments and techniques for moving forward
- Accurate assessment of hazards
- Calm and composure

Objective**Standard****Statement of the Competency**

To intervene in an emergency situation.

Achievement Context

- Based on an emergency procedure, the excursion's emergency response plan, and the regulatory and ethical framework for adventure tourism
- Using communication instruments, a first-aid kit and emergency equipment appropriate for the excursion
- With groups of six to ten people
- During an excursion in a natural environment

Elements of the Competency**Performance Criteria**

1. Assess the urgency of the situation.

- Proper application of emergency procedure
- Accurate, prompt identification of measures to be taken

2. Provide first aid.

- Observance of emergency response plan
- Appropriate reaction at accident site
- Recognition of signs of shock
- Accurate assessment of victim's condition
- Proper use of cardiopulmonary resuscitation (CPR) techniques
- Proper use of first-aid kit
- Strict application of trauma protocols
- Appropriate follow-up

3. Apply survival techniques.

- Observance of emergency response plan
- Appropriate group management
- Lighting a fire under adverse conditions
- Effective use of heat reflector
- Construction of emergency shelter using various materials, in summer and winter weather
- Appropriate rationing of food and water supplies

4. Carry out search, rescue and evacuation operations.

- Observance of emergency response plan
- Correct application of search, rescue and evacuation techniques appropriate to activity

5. Coordinate activities with other parties concerned.

- Observance of emergency response plan
- Use of communication protocol adapted to the situation

6. Report incidents.

- Accurate description of events, of measures taken and results obtained
- Completion of necessary forms
- Observance of the organization's media protocol

Objective**Standard****Statement of the Competency**

To coordinate food-preparation activities in the field.

Achievement Context

- Based on customer needs and constraints, planned menus for the excursion, a risk-management plan, an emergency response plan, and the regulatory and ethical framework for adventure tourism
- Using the necessary outdoor cooking equipment
- During an excursion in a natural environment

Elements of the Competency**Performance Criteria**

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. Follow up on menus. | <ul style="list-style-type: none"> • Consideration of customers' needs and constraints • Observance of planned menus • Adaptation of menus, if necessary • Appropriate rationing of supplies |
| <ol style="list-style-type: none"> 2. Ensure the preservation and safety of food supplies. | <ul style="list-style-type: none"> • Proper food packaging • Safe storage, protected from elements and animals |
| <ol style="list-style-type: none"> 3. Cook outdoors on a cook stove. | <ul style="list-style-type: none"> • Appropriate division of tasks • Proper use of stove • Proper use of cooking equipment • Attractive presentation of meals • Observance of hygiene and safety rules |
| <ol style="list-style-type: none"> 4. Cook outdoors on a fire. | <ul style="list-style-type: none"> • Appropriate division of tasks • Proper choice of wood • Lighting a fire under various conditions • Effective control of fire and coals while the fire is burning and after it has gone out • Proper use of fire for cooking • Proper use of cooking equipment • Attractive presentation of meals • Observance of hygiene and safety rules • Elimination of traces of fire |

