DEFINITION OF THE EVALUATION DOMAIN

Adult General Education

Diversified Basic Education Program

Computer Science

INTRODUCTION TO PROGRAMMING CMP-5082-2

September 2018

Québec

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Introduction

The Definition of the Evaluation Domain (DED) ensures consistency between a course and the related evaluation instruments. The DED is used to select, organize and describe the essential and representative elements of the course. The DED is based on the program of study and the course, but should by no means replace them in the planning of instructional activities.

All the DEDs produced after June 30, 2014, by the Ministère de l'Éducation et de l'Enseignement supérieur (MEES) are prescriptive. Consequently, they are the reference documents to be used in the development of all examinations, be they ministerial examinations or those developed by adult education centres or by Société GRICS (BIM). The DEDs thus serve as a model for preparing multiple equivalent versions of examinations that are valid across the province.[1]

In addition, as set out in the *Policy on the Evaluation of Learning,* adult learners must know what they will be evaluated on and what is expected of them.[2] The DEDs and the criterion-referenced rubrics are recommended for this purpose.

1. Québec, Ministère de l'Éducation du Québec, *Policy on the Evaluation of Learning* (Québec: Gouvernement du Québec, 2003), 47.
2. Ibid., 9.

Evaluation Content

General Information	

Broad Areas of Learning[3]
• Career Planning and Entrepreneurship
• Citizenship and Community Life
Subject Area
• Mathematics, Science and Technology
Families of Situations
• Information
  – Interacts by interpreting signals he/she receives and using input and output peripherals
  – Communicates by using computerized services
• Creation
  – Discovers what computers can do by consulting documentation and by experimenting
• Critical thinking
  – Critically examines computerized communication tools by applying evaluation criteria
  – Evaluates his/her work by setting quality standards
	Program of Study
	• Computer Science
	Course
	• Introduction to Programming

Essential Elements Targeted by the Evaluation	
Subject-Specific Competencies 1. Interacts in a computer environment 2. Produces computerized documents	**Categories of Knowledge** • Introduction to the concept of algorithms • Structures and functions • Programming syntax • Controls • Types of programming • Main programming languages • Interface ergonomics • Standard terminology associated with the programming language selected • Reading an algorithm • Developing an algorithm to meet a need • Translating an algorithm into a structured programming language • Troubleshooting • Compilation
Evaluation Criteria	
Evaluation Criteria for Competency 1 1.1 Accurate interpretation of messages and signals 1.2 Use of appropriate strategies to interact and to troubleshoot 1.3 Judicious application of evaluation criteria **Evaluation Criteria for Competency 2** 2.1 Proper presentation of the information based on the context 2.2 Rigorous compliance with the constraints identified	**Proficiency in Subject-Specific Knowledge** Proficiency in subject-specific knowledge presupposes its acquisition, understanding, application and mobilization, and is therefore linked with the evaluation criteria for the competencies.

3. The broad areas of learning are stated exactly as in the course. However, the person who designs the evaluation instrument may choose other broad areas of learning.

Explanation of the Evaluation Content

Evaluation Criteria

The evaluation criteria are stated exactly as in the course.

The examination focuses little, if at all, on criteria 1.1 and 1.2. To make a judgment related to these criteria, the teacher should observe the adult learner in the classroom. Obviously, any observations made during the examination should also be taken into account.[4]

Information Clarifying the Evaluation Criteria

1.1 Accurate interpretation of messages and signals

This criterion evaluates the adult learner's ability to react appropriately to explicit and implicit messages transmitted by a programming application.

1.2 Use of appropriate strategies to interact and to troubleshoot

This criterion evaluates the adult learner's ability to use sources of computer help (e.g. application help function, tutorials, the Internet).

1.3 Judicious application of evaluation criteria

This criterion evaluates the adult learner's ability to overcome obstacles related to programming.

2.1 Proper presentation of the information based on the context

This criterion evaluates the adult learner's ability to adapt his or her program to the desired production.

2.2 Rigorous compliance with the constraints identified

This criterion evaluates the adult learner's ability to present a production in compliance with the requirements of the task and the related quality standards.

Proficiency in Subject-Specific Knowledge

Proficiency in subject-specific knowledge is assessed through the evaluation of competencies, using tasks related to the evaluation criteria.

4. Since these criteria are evaluated for the purpose of certification, the teacher should make a judgment concerning the adult learner's ability **at the end of the course**. The mark given should not be based on several evaluations done at different times during the course.

Weighting

The weighting for the evaluation of the competencies is determined in accordance with the relative weighting given each competency in the course. The competencies are weighted as follows:

Competency 1, *Interacts in a computer environment:* 50%
Competency 2, *Produces computerized documents:* 50%

The weighting of the evaluation criteria appears in the assessment tools provided in the *Correction and Evaluation Guide*. Adult learners must be made aware of the evaluation criteria used to evaluate them and the corresponding weighting of each criterion.

Knowledge

The following table presents the prescribed knowledge selected for the examination. However, in special cases, particularly when an application does not have the tools and commands needed to acquire all of the prescribed knowledge, the missing items can be replaced with equivalent knowledge.

The examination must require adult learners to apply a representative sample of the knowledge indicated in the table.

Subject-Specific Content

Categories of Knowledge	Prescribed Knowledge
Introduction to the concept of algorithms	• Definition • Flowchart • Pseudo code
Structures and functions	• Variables • Mathematical operators • Logical operators • Elements of simple alternative structures • Elements of repetitive structures • Functions integrated in different classes of objects
Programming syntax	• Instructions • Reserved words • Input and output
Controls	• Button • Checkbox, option button • Image • Label, text box • Listbox • Frame
Types of programming	• Event-driven • Sequential

Categories of Knowledge	Prescribed Knowledge
Main programming languages	• C, C++ • Java, JavaScript • Visual Basic • PHP • ActionScript
Interface ergonomics	• ISO 9241-210 • Architecture
Reading an algorithm	
Developing an algorithm to meet a need	
Translating an algorithm into a structured programming language	• Interpreting an algorithm • Designing the program's user interface • Applying ergonomic standards to the interface • Writing code using indentation • Following the programming syntax • Adding comments to the source code
Troubleshooting	• Making the algorithm more efficient • Identifying possible inaccuracies in the program code • Solving the inaccuracies identified
Compilation	• Generating the executable version of a program • Executing and validating the definitive version of the program using test data

Specifications for the Evaluation Instruments

Examination: Number of Parts, Sections, Procedure and Duration

The examination is administered in one evaluation session. Adult learners are responsible for managing the time available to them.

Time: 180 minutes

Examination Content

The task consists in writing an algorithm and translating it into a structured programming language using a programming application.[5]

Information-Gathering Tools

- Adult's Booklet
- The adult learner's production (computerized document)
- The printed sheets, if applicable

Authorized Materials

- Programming application installed on a computer or other device*
- Internet access
- Printer connected to the device
- Removable medium (or storage space) containing the files needed for the production, if applicable
- Personal course notes
- Reference documents (paper or electronic format)

* Necessary materials

5. The goal of this course is to teach adult learners how to use a programming application. It is up to the educational institution to choose the application that enables learners to explore most of the prescribed knowledge for the course.

Assessment Tools

For the evaluation of Competency 1, *Interacts in a computer environment,* and Competency 2, *Produces computerized documents,* the criterion-referenced rubric (one for each competency) is the assessment tool used by the teacher. Criterion-referenced interpretation involves comparing the information gathered with the expected outcomes.[6] These rubrics are prescriptive and include the following rating scale:

Competency development:

- Advanced
- Thorough
- Acceptable
- Partial
- Minimal

A checklist is provided in the *Correction and Evaluation Guide* to help markers use the criterion-referenced rubrics.

Pass Mark

The pass mark is 60%.

Retakes

The adult learner must retake the entire examination.

6. Québec, Ministère de l'Éducation, *Policy on the Evaluation of Learning* (Québec: Gouvernement du Québec, 2003), 28-29.

APPENDIX – CRITERION-REFERENCED RUBRICS

Adult General Education

EVALUATION

Criterion-Referenced Rubrics

_____
Adult learner's name

_____
Teacher's name

_____
Date

Diversified Basic Education Program
Computer Science

Course
Introduction to Programming
CMP-5082-2

Competency 1: Interacts in a Computer Environment (50%)

Instructions:

- For each criterion, circle the statement(s) that correspond(s) to the adult learner's performance level.
- In the last column, enter the mark that corresponds to the assigned rating(s). The only mark that can be allotted for a given level is that indicated in the rubric.

Rating scale / Evaluation criteria	**Advanced** competency development	**Thorough** competency development	**Acceptable** competency development	**Partial** competency development	**Minimal** competency development	**Mark**
1.1 Accurate interpretation of messages and signals	Always responds appropriately to explicit and implicit messages sent by the application. **10**	Almost always responds appropriately to explicit and implicit messages sent by the application. **8**	Often responds appropriately to explicit and implicit messages sent by the application. **6**	Has difficulty recognizing and interpreting explicit and implicit messages sent by the application. **4**	Has great difficulty recognizing and interpreting explicit and implicit messages sent by the application. **2**	**___/10**
1.2 Use of appropriate strategies to interact and to troubleshoot	Always uses appropriate help sources to troubleshoot. **5**	Almost always uses appropriate help sources to troubleshoot. **4**	Often uses appropriate help sources to troubleshoot. **3**	Sometimes uses appropriate help sources to troubleshoot. **2**	Rarely uses appropriate help sources to troubleshoot. **1**	**___/10**
	Interaction with the application demonstrates a high level of familiarity. **5**	Interaction with the application demonstrates a good level of familiarity. **4**	Interaction with the application demonstrates a developing familiarity. **3**	Interaction with the application demonstrates a low level of familiarity. **2**	Interaction with the application demonstrates a very low level of familiarity. **1**	
1.3 Judicious application of evaluation criteria	Means to overcome obstacles related to programming are always well chosen. **30**	Means to overcome obstacles related to programming are almost always well chosen. **24**	Means to overcome obstacles related to programming are often well chosen. **18**	Means to overcome obstacles related to programming are sometimes well chosen. **12**	Means to overcome obstacles related to programming are rarely well chosen. **6**	**___/30**
					Mark for competency 1:	**___/50**

Assign a mark of 0 when the adult learner's performance does not correspond to any of the statements in the rubric.

Competency 2: Produces Computerized Documents (50%)

Instructions:

- For each criterion, circle the statement(s) that correspond(s) to the adult learner's performance level.
- In the last column, enter the mark that corresponds to the assigned rating(s). The only mark that can be allotted for a given level is that indicated in the rubric.

Rating scale / Evaluation criteria	**Advanced** competency development	**Thorough** competency development	**Acceptable** competency development	**Partial** competency development	**Minimal** competency development	**Mark**
2.1 Proper presentation of the information based on the context	The programming (structures and functions) is fully aligned with the desired actions. **25**	The programming (structures and functions) is well aligned with the desired actions. **20**	The programming (structures and functions) is aligned with the desired actions. **15**	The programming (structures and functions) is poorly aligned with the desired actions. **10**	The programming (structures and functions) is very poorly aligned with the desired actions. **5**	**__/30**
	The code is always well commented. **5**	The code is almost always well commented. **4**	The code is often well commented. **3**	The code is sometimes well commented. **2**	The code is rarely well commented. **1**	
2.2 Rigorous compliance with the constraints identified	The final product takes into account all of the task requirements and quality standards. **20**	The final product takes into account almost all of the task requirements and quality standards. **16**	The final product takes into account most of the task requirements and quality standards. **12**	The final product takes into account few of the task requirements and quality standards. **8**	The final product takes into account very few of the task requirements and quality standards. **4**	**__/20**
					Mark for competency 2:	**__/50**

Assign a mark of 0 when the adult learner's performance does not correspond to any of the statements in the rubric.

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