

Framework for the Evaluation of Learning

Chemistry



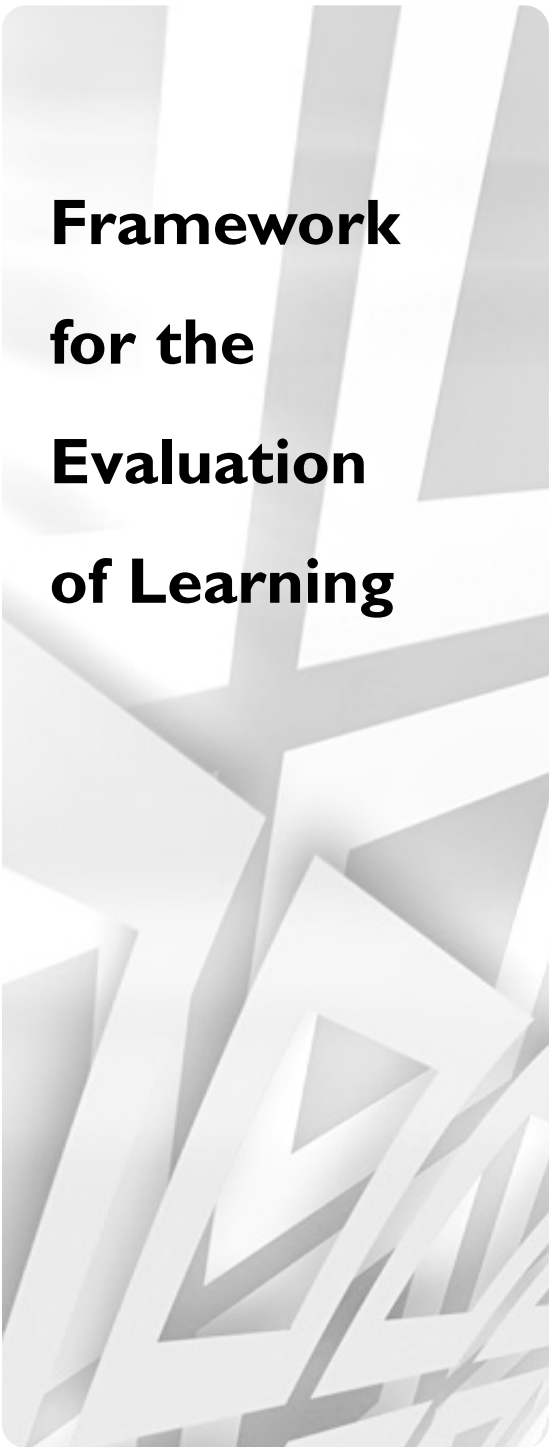
**Secondary
School**

Cycle Two

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Framework for the Evaluation of Learning

INTRODUCTION

Following the announcement of new orientations regarding the evaluation of student learning in the action strategy *I care about school!* and the publication of the *Progression of Learning* documents, the *Basic school regulation for preschool, elementary and secondary education* has been amended to require that the evaluation of learning be based on the *Framework for the Evaluation of Learning* produced for each program. This framework provides guidelines for the evaluation of learning as set out in the Québec Education Program (QEP) and helps to ensure the validity of the evaluation of student learning.

Determination of the subject mark

For each subject, the framework stipulates the weighting of the competencies in order to determine the subject mark that appears in the report cards. It should be noted that a summary table of weightings of the competencies for all elementary and secondary school programs is published separately.

Evaluation criteria

The evaluation criteria presented in the framework are based on those in the QEP. They take into account the information provided in the *Progression of Learning* documents with respect to the knowledge that students must acquire and apply. The criteria are presented in such a way as to simplify the evaluation process by reducing the number of results teachers must record as well as the number of results communicated in the report cards.

Evaluation of knowledge

The framework provides guidelines on how knowledge must be taken into account in the evaluation. As stated in the introduction to the *Progression of Learning* documents, evaluation must “focus on the acquisition of knowledge and the students’ ability to use this knowledge effectively in contexts that draw upon their competencies.”

Chemistry

Secondary School, Cycle Two

Determination of results

As set out in the *Basic school regulation*, the subject mark for Chemistry as well as its breakdown into practical and theory components are indicated in the report card. The subject mark is based on the evaluation of competencies in accordance with the weighting presented below.

Weighting		Wording in report card
<i>Seeks answers or solutions to problems involving chemistry</i> <i>Communicates ideas relating to questions involving chemistry, using the languages associated with science and technology</i>	40%	Practical
<i>Makes the most of his/her knowledge of chemistry</i> <i>Communicates ideas relating to questions involving chemistry, using the languages associated with science and technology</i>	60%	Theory

It should be noted that for evaluation purposes, the competency *Communicates ideas relating to questions involving chemistry, using the languages associated with science and technology* is considered part of the evaluation of the two other program competencies.

Evaluation criteria and explanations

The evaluation criteria are presented below, accompanied by explanations that will help teachers select or develop appropriate evaluation tools.

Table 1 presents the evaluation criteria for *Seeks answers or solutions to problems involving chemistry* and *Communicates ideas relating to questions involving chemistry, using the languages associated with science and technology*. The methodological tasks related to these competencies are performed mainly in a laboratory. Communication is evaluated primarily in terms of the various graphic or symbolic representations that the student selects.

Table 2 presents the evaluation criteria for *Makes the most of his/her knowledge of chemistry* and *Communicates ideas relating to questions involving chemistry, using the languages associated with science and technology*. The conceptual tasks related to these competencies allow students to apply their knowledge of physics through problem solving. Communication is evaluated primarily in terms of how rigorously the student uses scientific and technological language, for example, when formulating explanations.

Evaluation of learning

Section 19 of the *Education Act* stipulates that teachers are entitled to select “the means of evaluating the progress of students so as to examine and assess continually and periodically the needs and achievement of objectives of every student entrusted to [their] care.” Teachers should therefore use a variety of means to evaluate student learning; for example, they may use a test to verify the knowledge students have acquired or a rubric to evaluate the students’ ability to apply that knowledge when carrying out a task.

TABLE I

Seeks answers or solutions to problems involving chemistry
Communicates ideas relating to questions involving chemistry,
using the languages associated with science and technology

40%

Evaluation of learning

(See QEP)

- Verify the knowledge acquired by the student
- Evaluate the student's ability to apply the knowledge acquired

Evaluation criteria and explanations

Appropriate representation of the situation	• Reformulation of the problem • Formulation of hypotheses
Development of a suitable plan of action	• Planning of steps in the plan of action • Control of variables • Selection of resources (materials, equipment, tools, etc.)
Appropriate implementation of the plan of action	• Use of selected materials in accordance with the precision of the instruments or tools • Observance of safety rules • Recording of data • Consideration of uncertainty and errors in measurements • Use of appropriate strategies and techniques • Adjustments during the implementation of the plan of action • Use of appropriate types of representation (tables, graphs, diagrams)
Development of relevant explanations, solutions or conclusions	• Formulation of explanations or conclusions in accordance with the data collected and knowledge acquired • Verification of consistency of the hypothesis with the analysis of the results • Proposal of improvements • Use of mathematical formalism • Use of appropriate terminology, rules and conventions

TABLE 2

Makes the most of his/her knowledge of chemistry
Communicates ideas relating to questions involving chemistry,
using the languages associated with science and technology

60%

Evaluation of learning

(See QEP)

- Verify the knowledge acquired by the student
- Evaluate the student's ability to apply the knowledge acquired

Evaluation criteria and explanations

Accurate interpretation of the problem	• Identification of elements relevant to the problem and the connections between them • Proposal of a tentative explanation or solution
Relevant use of knowledge of chemistry	• Selection and application of: – concepts – laws – models – theories
Appropriate formulation of explanations	• Formulation or justification of explanations on the basis of knowledge acquired • Use of mathematical formalism • Use of appropriate terminology, rules and conventions

