

## Quebec - Achievements and Competencies

### Learning Outcomes

Cycle 1 (Gr. 1-2)	Cycle 2 (Gr. 3-4)	Cycle 3 (Gr. 5-6)
Properties of matter	Properties of matter	Properties of matter
	Techniques and instrumentation	Techniques and instrumentation

The Quebec Achievements and Competencies are based on the Progression of Learning Outcomes derived from the Quebec Education Plan set by the Ministère de l'Éducation, du Loisir et du Sport.

### Specific Expectations

#### **CYCLE 1 (Gr. 1-2)**

##### MATERIAL WORLD

###### A. Matter

1. Properties and characteristics of matter
  - a. Classifies objects according to their properties (e.g. colour, shape, size, texture, smell)

In this crime scene investigation, students will visit six different stations to analyze the evidence. They must use their senses to recognize and describe the attributes of different materials, such as cookies, clothing fibres, and dental molds. During the investigation, the students need to sequence the evidence they've collected appropriately in order to make sense of the crime and identify the suspect.

###### F. Appropriate Language

1. Terminology related to an understanding of the material world

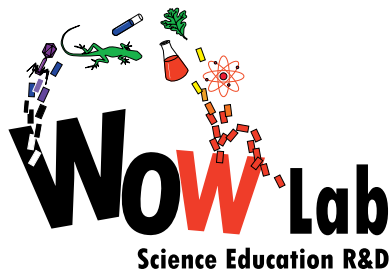
Students should use the appropriate terminology throughout the activity (e.g. fibre, evidence, fingerprint, crime scene investigation, suspect, victim).

#### **CYCLE 2 (Gr. 3-4)**

##### MATERIAL WORLD

###### A. Matter

1. Properties and characteristics of matter
  - e. Describes the shape, colour and texture of an object or a substance



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In this crime scene investigation, students will visit six different stations to analyze the evidence. They must use their senses to recognize and describe the attributes of different materials, such as cookies, clothing fibres, and dental molds. During the investigation, the students need to sequence the evidence they've collected appropriately in order to make sense of the crime and identify the suspect.

### E. Techniques and Instrumentation

4. Design and manufacture of instruments, tools, machines, structures, devices, models, and circuits
  - b. Interprets a diagram or a plan containing symbols

During the crime scene investigation, students are investigating a variety of evidence, looking for patterns and specific attributes that relate to the crime. Students need to interpret the information and analyze it appropriately in order to solve the crime.

### F. Appropriate Language

1. Terminology related to an understanding of the material world

Students should use the appropriate terminology throughout the activity (e.g. fibre, evidence, fingerprint, crime scene investigation, suspect, victim, arch, loop, whorl, sample, mold).

### **CYCLE 3 (Gr. 5-6)**

#### MATERIAL WORLD

##### A. Matter

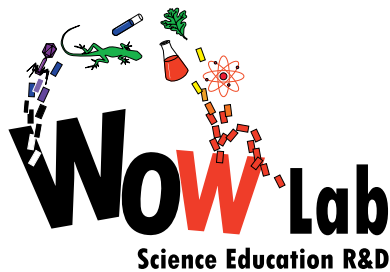
1. Properties and characteristics of matter
  - j. Describes various other physical properties of an object, a substance or a material (e.g. elasticity, hardness, solubility)

In this crime scene investigation, students will visit six different stations to analyze the evidence. They must use their senses to recognize and describe the attributes of different materials, such as cookies, clothing fibres, fingerprints, and dental molds. The students need to group the evidence to solve the crime. For example, at the *Dental Analysis Station* they may classify the dental imprints according to tooth curvature, number of teeth, whether the teeth are straight or crooked, large or small, and tightly spaced or not. At the Cookie Analysis Station, different cookie crumbs will be provided and students must compare variations between them to determine who sat where and who ate which cookie. By analyzing the physical properties of the various materials, students can solve the problem by identifying the suspect.

### E. Techniques and Instrumentation

4. Design and manufacture of instruments, tools, machines, structures, devices, models, and circuits
  - b. Interprets a diagram or a plan containing symbols

During the crime scene investigation, students are investigating a variety of evidence, looking for patterns and specific attributes that relate to the crime. Students need to interpret the information and analyze it appropriately in order to solve the crime.



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### F. Appropriate Language

#### 1. Terminology related to an understanding of the material world

Students should use the appropriate terminology throughout the activity (e.g. fibre, evidence, fingerprint, crime scene investigation, suspect, victim, arch, loop, whorl, sample, mold, chromatography).

## Strategies

### EXPLORATION STRATEGIES

- Studying a problem or a phenomenon from different points of view (e.g. social, environmental, historical, economic perspectives)
- Distinguishing between the different types of information useful for solving the problem
- Formulating questions
- Putting forward hypotheses (e.g. individually, as a team, as a class)
- Exploring various ways of solving the problem
- Imagining solutions to a problem in light of his or her explanations
- Taking into account the constraints involved in solving a problem or making an object (e.g. specifications, available resources, time allotted)
- Examining his or her mistakes in order to identify their source
- Using different types of reasoning (e.g. induction, deduction, inference, comparison, classification)
- Using empirical approaches (e.g. trial and error, analysis, exploration using one's senses)

### STRATEGIES FOR RECORDING, USING AND INTERPRETING INFORMATION

- Validating sources of information
- Using a variety of observational techniques and tools
- Using different tools for recording information (e.g. diagrams, graphs, procedures, notebooks, logbook)

### COMMUNICATION STRATEGIES

- Using different means of communication to propose explanations or solutions (e.g. oral presentation, written presentation, procedure)
- Using tools to display information in tables and graphs or to draw a diagram
- Exchanging information
- Comparing different possible explanations for or solutions to a problem in order to assess them (e.g. full-group discussion)