a WOW Lab BLUEPRINT Solargraphy

Quebec - Achievements and Competencies

Learning Outcomes

Cycle 1 (Gr. 7-8)
Light

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

Specific Expectations

GENERAL EDUCATION PATH

CYCLE 1 (Gr. 7-8) — Secondary 1 and 2

EARTH AN SPACE

C. Astronomical Phenomena
    1. Concepts related to astronomy
        c. Light
            i) Defines light as a form of radiant energy
            ii) Describes properties of light (propagation in a straight line, diffuse reflection by surfaces)
            iii) Explains different phenomena using the properties of light (cycles of day and night, seasons, phases of the Moon, eclipses)

In *Solargraphy*, students get the opportunity to build their own pinhole cameras which they can use to observe the changing position of the sun and the effects light has on photographic paper. Teachers can use this activity to teach students about the definition of light, its different properties, and related scientific concepts such as cycles of day and night. Students will learn that it is the rotation of the Earth that allows the camera to capture the rays of light from the sun throughout the day. They will also learn how a photograph is produced. Photographic paper is coated in a light-sensitive chemical emulsion which alters when exposed to sunlight, allowing an image to be formed.

a WOW Lab

BLUEPRINT

Solargraphy - Quebec - Achievements and Competencies

APPLIED GENERAL EDUCATION PATH

CYCLE 1 (Gr. 7-8) — Secondary 1 and 2

EARTH AN SPACE

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Techniques

A. Technology
  2. Manufacturing
    a. Safely using machines and tools
      i) Uses tools safely (e.g. retractable utility knife, hammer, screwdriver, pliers)
    f. Assembling and disassembling
      i) Identifies and gathers the parts and hardware
      ii) Chooses the appropriate tools

Strategies

A. EXPLORATION STRATEGIES
  3. Referring to similar problems that have already been solved
  4. Becoming aware of his or her previous representations
  6. Formulating questions
  7. Putting forward hypotheses (e.g. individually, in teams, as a class)
  9. Anticipating the results of his or her approach
  10. Imagining solutions to a problem in light of his or her explanations

11. Taking into account the constraints involved in solving a problem or making an object (e.g. specifications, available resources, time allotted)
12. Examining his or her mistakes in order to identify their source
13. Using different types of reasoning (e.g. induction, deduction, inference, comparison, classification)
14. Using empirical approaches (e.g. trial and error, analysis, exploration using one's senses)
15. Ensuring that the procedure is appropriate and safe and making the necessary adjustments
16. Collecting as much scientific, technological and contextual information as possible to define a problem or predict patterns
18. Developing various scenarios

B. INSTRUMENTATION STRATEGIES

4. Using different tools for recording information (e.g. diagrams, notes, graphs, procedures, logbook)
5. Using a variety of observational techniques and tools
6. Selecting suitable techniques or tools for observation

C. ANALYTICAL STRATEGIES

1. Identifying the constraints and important elements related to the problem-solving situation
2. Dividing a complex problem into simpler subproblems
3. Using different types of reasoning (e.g. inductive and deductive reasoning, comparison, classification, prioritization) in order to process information
4. Reasoning by analogy in order to process information and adapt scientific and technological knowledge

D. COMMUNICATION STRATEGIES

3. Exchanging information
4. Comparing different possible explanations for or solutions to a problem in order to asses their relevance (e.g. full-group discussion)