a WOW Lab BLUEPRINT Indoor Rockets

Quebec - Achievements and Competencies

Learning Outcomes

Physics (Sec. 5)
Kinematics

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

PHYSICS - Optional Program

Secondary 5

KINEMATICS

4. Motion of projectiles
    a. Explains the motion of a projectile (combination of uniform rectilinear motion and uniformly accelerated rectilinear motion)
    b. Determines the position, displacement or instantaneous velocity of a projectile, or the time elapsed

Students should analyze the interaction between the forces applied to the rocket from the time it is launched to the time it lands. Students should realize that drag, thrust, lift, and gravity are forces that are acting on the rocket. They should recognize that the parabolic path travelled by the rocket is a combination of the horizontal and vertical components of motion. Because the rocket is launched from different angles, students should compare the rocket's landing position, displacement, velocity, and the time it travelled for each rocket test.

a WOW Lab

BLUEPRINT

Indoor Rockets - Quebec - Achievements and Competencies

Strategies

A. EXPLORATION STRATEGIES

2. Distinguishing between the different types of information useful for solving the problem
3. Referring to similar problems that have already been solved
4. Becoming aware of his or her previous representations
5. Drawing a diagram for the problem or illustrating it
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)
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

3. Using technical design to illustrate a solution (e.g. diagrams, sketches, technical drawings)
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
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)
5. Using tools to display information in various formats (e.g. data tables, graphs, diagrams)