

Physics

Kindergarten

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A framework for Inquiry

Significant Content: A focus on important knowledge and concepts derived from standards. Students should find the content to be significant in terms of their own lives and interests.

A need to Know: Activate learner curiosity. Engage student interest and initiate questioning with an entry event: this could be a story, a video clip, a photograph...

A Driving Question: A question that captures the heart of the inquiry in clear, compelling language, giving students a sense of purpose and challenge.

Authentic Purpose: Establishing an authentic purpose for the tasks we invite our learners to explore, enriches learning opportunities.



Voice and Choice: Guided by the teacher, learners have voice and choice in terms of design, what resources they will use and how they structure their time.

Revision and reflection: Learners go through a process of seeking feedback from their peers to think in-depth about their inquiry. Students learn that revision and reflection are frequent features of real-world work.

In-depth Inquiry: Learners follow a trail that begins with their own questions, leading to a search for resources and the discovery of answers and ultimately leads to generating new questions, testing ideas and drawing their own conclusions.

21st Century Competencies: Collaboration, communication, creativity, critical thinking, problem solving and social responsibility.

Adapted from: Larson, J. & Haggan, J. (2012). 8 essentials for project-based learning.

Suggested Ways to Engage Students in Science Inquiry:

How can you make objects move? (Need to Know)

How does the shape or size of an object affect the object's movements? (Significant Content)

How does the material the object is made of affect the object's movements? (A Driving Question)

Suggested Experiments:

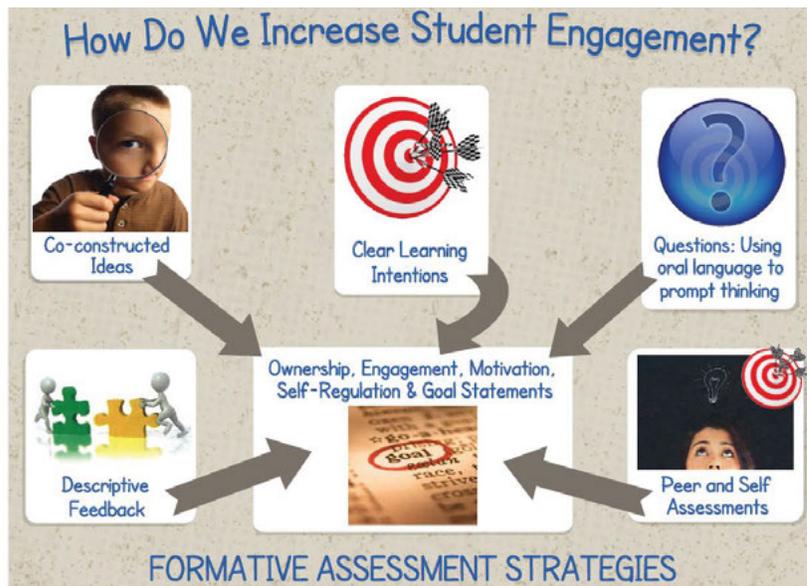
Make a maze using lego. Use marbles, small balls, or other objects. Observe how the objects move through the maze. Use language such as roll, slide, bounce, etc. Build the maze on a flat surface, then try it on a vertical surface and compare the objects' movements. Change the size or shape of the object and compare the movements.

Build a pom pom drop. Use toilet rolls and tape to create a vertical structure to drop a pom pom through. Observe the movement of a pom pom through the structure. If changes are made to the structure, how does this change the object's movement.

Using paper plates and some wooden blocks, create a spiral maze. Watch how a variety of objects move through the maze.

Paper Plate Marble Track



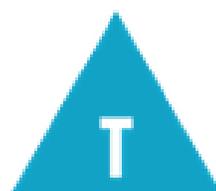


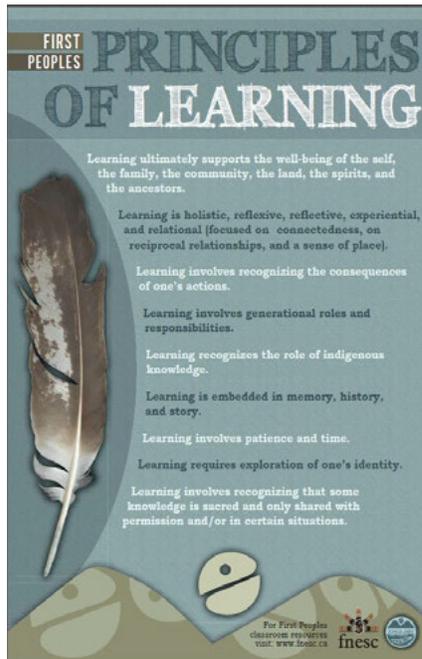
Suggested Ways to Embed Assessment *for* Learning Strategies:

Use the *Collaborative Learning Map* to assess group learning experiences.

Encourage students to design ways of moving the marbles. Ask them to draw their designs and inventions with labels for the materials they would use. Have students draw and label their designs using descriptive vocabulary. You may also want to create a video of them telling about their design and why it works as part of their *learning portfolio*.

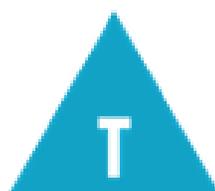
Encourage students to design ways of moving objects using rolls, rollers, and a variety of materials. Ask them to draw their designs and inventions with labels for the materials they would use. Have students draw and label their designs. You may also want to create a video





Suggested Ways to Weave Aboriginal Ways of Knowing within this unit:

Aboriginal peoples used canoes as a method of travel. Look at a variety of paddles and their shapes to explore how different paddle shapes helped propel the canoe through the water. Kids could make canoe models and explore how they move through the water.



Online and Other Resources

A collection of simple physics activities for kids.

littlebinsforlittlehands.com

This website is a great resource for teachers. Go to the Exploring Ramps and Friction page under Lesson Plans.

pre-kpages.com

Although we don't like the name of this site, there are some great physics activities on it!

frugalfunforboys

This site has a fun movement experiment using magnets and small cars.

sciencekiddo.com

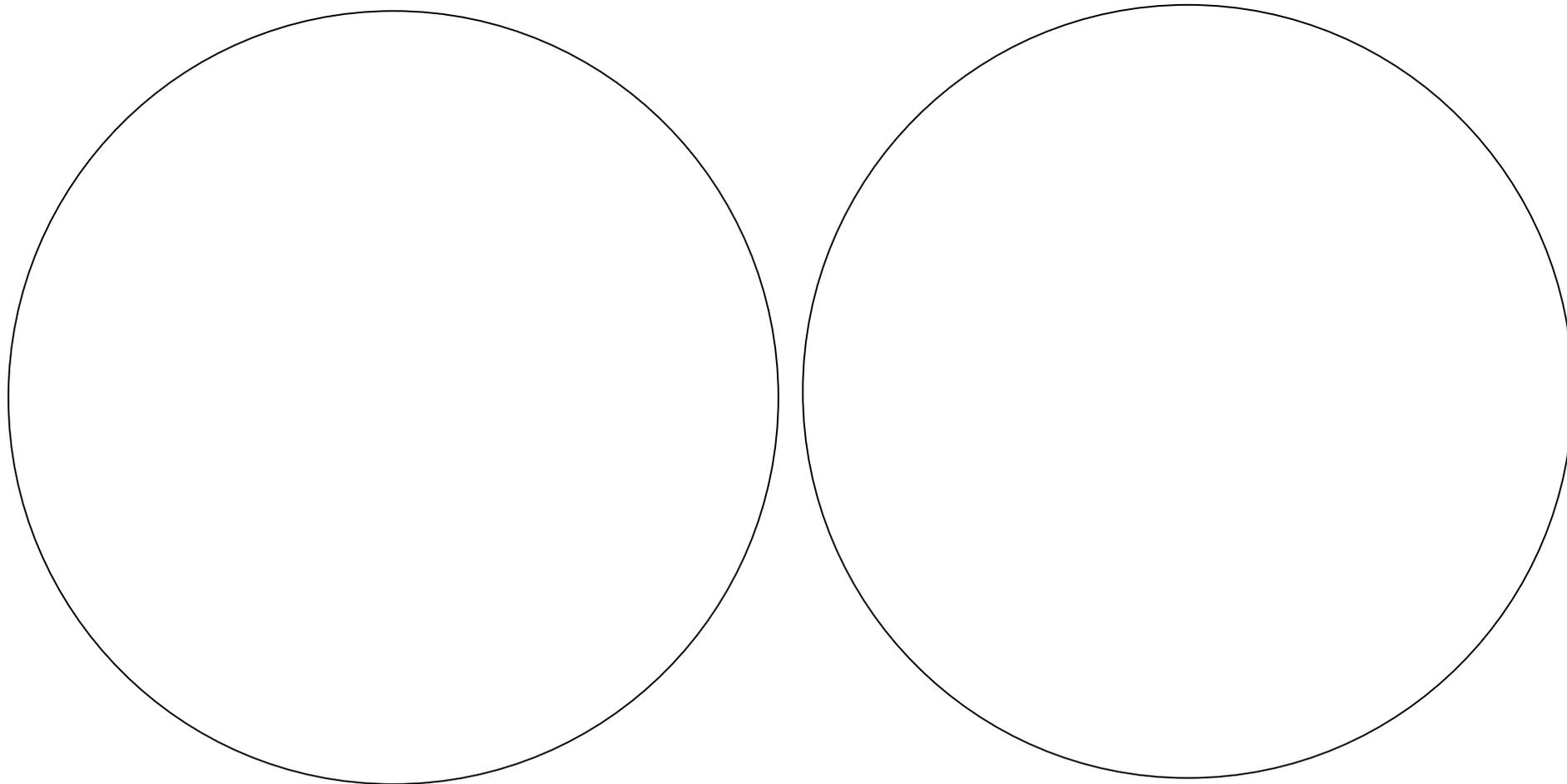
A site demonstrating some experiments for exploring the ways things move by using cars, straws, tape, string, paper, etc.

steampoweredfamily.com

This site uses small cars with felt markers taped on the back to explore movement. Drawing with cars is the name of the activity. Put the cars on ramps, blow on the cars to move them, use a variety of surfaces such as bubble wrap, sand paper, etc. to explore the patterns of movement made by the cars on these surfaces.

housingaforest.com

Sorting Circles

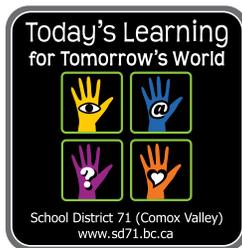




Building Inquiry: How does collaboration help us create and problem solve?

- Green Light: I can do this **independently**.
- Yellow Light: I can do this **with guided support**.
- Red Light: I can do this **with direct support**.

Learning Target				Evidence
I can share my ideas with my team.				
I can listen to others' ideas.				
I can make my group feel comfortable (smile at them, use kind words, act like I want to work with them).				
I can work with my group to get the job done.				
I can explain the purpose of our project.				



An electronic copy of this teacher guide can be found on Learn71 at <https://portal.sd71.bc.ca/group/wyhzgr4/Pages/default.aspx>

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