

Curriculum Planning & Assessment Resource

Science

Grade 3: Energy



**Alberta Regional Professional
Development Consortia**

*Dedicated to the provision of professional learning
opportunities at the local, regional and provincial levels*



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About This Document

This Curriculum Planning & Assessment Resource is intended to be a collection of sample activities, assessments, and resources that teachers may wish to use as they develop their unit plans. This document is not intended to be a sequential list of activities. Rather, the intent is that teachers choose from this resource what is appropriate for their context, and sequence it in their planning.

The sample activities, assessments and resources included in this document have undergone an initial review to determine appropriateness and alignment to the curriculum. However, it is expected that teachers use their professional judgment in selecting activities, assessments and resources that are appropriate for their context.

While every attempt has been made to provide credit and receive permissions, some errors or omissions may have occurred. Please contact info@arpc.ab.ca to report any error or omissions.

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Acknowledgements

Thank you to all the teachers, curriculum specialists, and technical expertise from Alberta school divisions and ARPDC who collaborated to develop, review, and revise these planning and assessment documents to support curriculum implementation.

INTRODUCTION

Organizing Idea

Energy: Understandings of the physical world are deepened by investigating matter and energy.

Guiding Question

How can forces relate to changes in movement?

Learning Outcome

3E1 Students investigate and explain how forces affect the movement of objects.

Summative Assessment(s) - Transfer *(In Progress)*

Summative assessments can include the following.

- Understanding/making sense of a novel context from the real world using one or more concepts (eg. “Is this an example of diversity?). Example
- Understanding/making sense of a novel context using one or more understandings (eg. Students watch a video or complete a case study and explain what they viewed/interpreted through the lens of the understanding). [Example](#)
- Being able to describe why (developing predictions or hypotheses) something is unfolding, or what might happen next using learned concepts and understandings.
- Apply learning (create products; undertake projects; taking action such as creating a campaign) in a novel context or taking action using the understanding(s). Example
- Construct arguments by taking a position on a novel issue and defending it with known understandings.

Summative Assessments: [Surface, Deep and Transfer Assessment](#)

Sample Summative Assessment: In this summative assessment, students will use four objects of varying mass (weight). They will investigate the following question: How does the use of simple machines affect the amount of effort needed to force an object to move?

Sample Summative: [3E1 Design Project - Helping With Chores](#)

Computer Science & Energy Connection	Scientific Methods
<ul style="list-style-type: none">• Introductory Video & Slide Deck "Wait! What? I'm teaching Computer Science?"<ul style="list-style-type: none">◦ (Part 1) (Part 2)	<ul style="list-style-type: none">• Scientific Method Introductory Video - ARPDC (How scientific method fits in the curriculum.)• Integrating Energy with Scientific Methods Sample Unit Plan (Planning Guide step 4)
<ul style="list-style-type: none">• Integrating Computer Science & Grade 3 Energy<ul style="list-style-type: none">◦ Video Slide Deck• Grade 3 Computer Science Curriculum Planning and Assessment Resource• Exploring Grade 3 Computer Science<ul style="list-style-type: none">◦ Video Slide Deck	<ul style="list-style-type: none">• Introducing Steps in an Investigation: Grade 3<ul style="list-style-type: none">◦ asking questions◦ making predictions◦ planning the investigation◦ observing and recording data◦ analyzing data◦ reaching conclusions

	<ul style="list-style-type: none"> ○ discussing observations and conclusions ● Grade 1-6 Investigation Steps Progression
<ul style="list-style-type: none"> ● Computer Science Organizing Idea KUSP cards - use these to help understand and integrate CS KUSPs throughout teaching and learning in Science and across curricula. 	
<ul style="list-style-type: none"> ● CS Unplugged - “Computer Science without a computer” ● ScratchJr - teach computer science outcomes using the ScratchJr app on a Chromebook, iPad or other device. This is a great way to introduce computational thinking outcomes before introducing them to block coding later. ● Computational Thinking videos <ul style="list-style-type: none"> ○ For students: Jules. Computational Thinking.Video - 4 minutes overview, suitable for students - explanation followed by example about Max and his car issues - https://youtu.be/mUXo-S7gzds ○ For teachers: Hello Ruby. “Computational thinking?” - a whimsical and sensible approach to learning about computational thinking: “All big problems are tiny problems stuck together.” See her Youtube playlist here, Love Letters for Computers. 	

Click to jump!

KUSPs

3E1.1

3E1.2

[Literature Connections](#)

KUSPs 3E1.1

Prerequisite Knowledge

Students know and be able to use descriptive words for:

- how an object moves such as rolls or slides
- the types of pathways objects can move in such as zig-zag, straight, curved
- the type of movement related to different materials

Misconceptions

Students may believe that:

- an object is moving, a force must be acting on it. Motion implies force.
- forces get things going but don't stop things.
- all objects slow down and eventually stop
- a force has to keep being applied for an object to stay in motion..
- people have the power to move things, so objects Some students believe that inert objects can alter another object's motion, such as a wall stopping a ball thrown at it, but Common Student Idea(s) Scientific Explanation move only when people push or pull them.
- if an object is at rest, no forces are pushing or pulling it.

Source: CPP/EDU. [Grade 3 Forces-Common Student Ideas](#)

I Know Statements

- I know that a force is a push or pull on an object resulting from an interaction with another object.
- I know that an object that is not moving will stay still until a force makes it move, and an object that is moving will keep moving until a force stops it. (Newton's First Law)
- I know that contact forces occur between objects that touch each other.
- Contact forces include forces that are applied by a person or an object on another object (applied), caused by objects, surfaces, or substances sliding against each other (friction), applied by pulling on a string or rope connected to an object (tension) & caused by a compressed or stretched object or spring (elastic or spring).
- I know ways to apply a contact force to an object include stretching, pulling, squeezing, pushing.

- (continued in right column))

Student Language | Essential Vocabulary & Concepts

[Concept Project](#)

- Force
- Contact Force
- Strength
- Direction
- Interaction
- Change
- Property
- Movement

I Know Statement (continued from left column)

- The strength of forces applied to objects can be described as strong, weak, large & small.
- The direction of forces applied to objects can be described as upward, downward, from the left, from the right, from both sides & from all directions
- Changes to an object's movement when a force is applied include changing speed, starting, stopping & changing direction

I Understand Statements

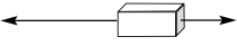


- I understand that forces can affect properties and movement of objects in different ways.

I Can Statements | Skills

- I can describe where forces may exist in everyday situations.
- I can describe the strength and direction of forces applied to objects.
- I can compare the strength of forces applied to objects.
- I can predict how an object will be affected by different strengths and directions of force.
- I can conduct investigations to demonstrate the effects of forces on the movement of objects.
- I can conduct investigations to demonstrate how forces can change the shape or size of objects.

KUSP 3E1.1

Learning Outcome				
3E1 Students investigate and explain how forces affect the movement of objects.				
Knowledge	Understanding	Skills & Procedures	Sample Activities & Resources What is Surface, Deep and Transfer	Assessments (formative)
<p>A force is a push or pull on an object resulting from an interaction with another object.</p> <p>An object that is not moving will stay still until a force makes it move, and an object that is moving will keep moving until a force stops it. (Newton's First Law)</p> <p>Contact forces occur between objects that touch each other.</p> <p>Contact forces include forces that are</p> <ul style="list-style-type: none"> • applied by a person or an object on another object (applied) • caused by objects, surfaces, or substances sliding against each other (friction) • applied by pulling on a string or rope connected to an object (tension) • caused by a compressed or stretched object or spring (elastic or spring) <p>Ways to apply a contact force to an object include</p> <ul style="list-style-type: none"> • stretching • pulling • squeezing • pushing <p>The strength of forces applied to objects can be described as</p> <ul style="list-style-type: none"> • strong • weak • large • small <p>The direction of forces applied to objects can be described as</p>		<p>Describe where forces may exist in everyday situations.</p> <p>Describe the strength and direction of forces applied to objects.</p> <p>Compare the strength of forces applied to objects.</p>	<p>Sample Surface Level Activities Earth's Surface Change Time Natural Events</p> <ul style="list-style-type: none"> • How Objects Interact Youtube Video • Forces and Motion Youtube Video • GCSE Physics - Contact and NonContact Forces Youtube Video • What is a Force? Youtube Video • RDPSD Gr 3 Energy Presentation (slides 1-67) and Workbook <hr/> <p>Sample Deep Level Activities</p> <ul style="list-style-type: none"> • ECSB - Slime and Oobleck Curriculum Crate • ECSB - Friction Sled Race Curriculum Cate <hr/> <p>Local/Nearby Options for Experiential Learning Excursions</p> <ul style="list-style-type: none"> • Visit a nearby race track or go cart track. • Bring hot wheels track into class • Play a game of soccer. Practice different types of passes and kicks to make the ball do different things <hr/> <p>Other Resources</p> <ul style="list-style-type: none"> • 	<p>Fish Force: Game to apply force for a target - PBS</p>

<ul style="list-style-type: none"> • upward. • downward • from the left • from the right • from both sides • from all directions <p>Changes to an object's movement when a force is applied include</p> <ul style="list-style-type: none"> • changing speed • starting • stopping • changing direction 				
	<p>Forces can affect properties and movement of objects in different ways.</p>	<p>Predict how an object will be affected by different strengths and directions of force.</p> <p>Conduct investigations to demonstrate the effects of forces on the movement of objects.</p> <p>Conduct investigations to demonstrate how forces can change the shape or size of objects.</p>	<p style="text-align: center;">Infusing Indigenous Knowledge</p> <ul style="list-style-type: none"> • Infusing Indigenous Knowledge into Curriculum (Grades 1-12) Website: Grade 3 Science: <ul style="list-style-type: none"> ○ Use an archaeological dig to learn about the past. ○ Share examples of stories and traditional knowledge from the past: <ul style="list-style-type: none"> • In 1992, an Elder found arrowheads in the river bed. • Story about a hill and why it was preserved to save insects (Emile Houle). • In Peace River, a hill changed shape • Elder's story about big snowballs in the field by High Prairie (Herman Sutherland). ○ Share Elders' knowledge about fish traps. ○ Observe the movement of trees and earth with the growth of the trees and the weather in Wabasca. ○ Observe how road building changes the environment and lives (road between Peerless and Trout and Fort McMurray) • Learning from the Land • The Legend of Weesakayjack First Nation Legend How North America came to be • Inuit Observations of Climate Change 	<p>Fish Force: Game to apply force for a target - PBS</p> <p>Explain what will happen to the object in each of the following situations.</p> <ol style="list-style-type: none"> 1.  2.  3.  <p>Look for:</p> <ol style="list-style-type: none"> 1. It will move to the left because the force pulling to the left is greater than the force pulling to the right. 2. It will remain in place because the forces are equal and balanced. 3. It will move to the right because the force pulling to the right is greater than the force pulling to the left. <p>Source: Manitoba Ministry of Education: Science Grade 5 p.5.83</p>

Resources

Additional Websites and Resources to Support Learning

Indigenous Related:

- The [Learning Circle](#): Classroom Activities on First Nations in Canada - Ages 4 to 7- **The Learning Circle** has been produced to help meet Canadian educators' growing need for elementary-level learning exercises on First Nations. It is the second in a series of four classroom guides on First Nations in Canada. See Unit 2 for Seasons.
- [Learning from the Land \(teacher information\)](#) - Although there is much diversity between First Nations, Métis, and Inuit, a deep and abiding connection to the land is common. Dr. Leroy Littlebear says that "The land is a sacred trust from the Creator. The land is the giver of life like a mother. The ecological aspect of Indigenous knowledge is all about the land. The land is a source of identity for Aboriginal People. CASS Resource.

Specific to Grade 3 Energy - Forces

- [Energy Grade 3 - ARPDC Video](#)
- **PBS: What is force?** Students learn what a force is using the language of push or pull. OR [How Things Move](#) - students decide on the types of force and motion that results in varied scenarios. A students support sheet is available.
- [Motion: How Things Move](#) Next generation Science - includes the various pathways of movement.
- [NSTA](#) - Sources of lessons, investigations and formative assessments for understanding pushes and pulls -
- **Kids Academy: Patterns in Motion - Forces and Interactions** - students in Grade 3 will delve into the fascinating world of force and interactions, a crucial chapter of their science curriculum. Through engaging activities such as the "Position and Motion Worksheet" and the "Pendulum Experiment Worksheet for 3rd Grade," learners will explore fundamental concepts that explain how objects move and interact with force.
- [Forces and Motion](#)- SuperSTAAR - Several lessons, activities and videos related to the Grade 3 unit on Forces and Motion.
- **Hand2Mind -Design a Sled** - design a sled that will slide easily - practice on a ramp.
- **Let's Talk Science** - a large variety of sources for STEM - search your topic and grade You could use [Push and Pull Lessons](#) - This inquiry provides opportunities for students to observe, classify and compare the forces involved in familiar activities such as pushing a swing, propelling a skateboard forward, or pulling a wagon.
- **Teach Engineering - Save the Stuffed Animal Push Pull Activity** Students develop an understanding of the concepts of "push" and "pull" as they "save" stuffed animals from danger using LEGO® MINDSTORMS® EV3 robots. After learning more about the concepts through a robot demonstration, students explore the concepts themselves in the context of saving stuffed animals from the table edges.
- **Science North - Scratch Push or Pull Game** - identify **forces** as either a **push** or a **pull**. Scratch is a block-based visual programming language for students. Students can drag **and** combine code blocks to make a range of programs which ...
- [Science Buddies - Balance the forces within a mobile](#) - When you look at the mobile sculpture, you might wonder how it can stay balanced all the time even when it is moving in the air. In this activity, you will make your own mobile sculpture and find out how it stays balanced.

General Sites to Support a Variety of Concepts in Grade 3

- **Ontario Council for Technology Education OTCE** - a variety of units available for download.
- [Next Generation Science: offers a variety of supports](#) - instruction and assessment, Planning and Communication.
- **Ontario Science Centre: Curriculum Resources** - Enter your topic into the search and refine what type of material you would like to preview.
- Instructional Planning and Teaching in Science - [IOWA Department of Education](#) -

Resources Developed by School Divisions/Educational Institutions

[Edmonton Catholic Pacing Guides](#)

[Edmonton Catholic Curriculum Crates](#)

[Edmonton Catholic Schools: Academic Vocabulary: Kindergarten to Grade 3](#)

Edmonton Public [Science Snippets K-3](#)

Edmonton Public [Scope and Sequence](#)

[LearnAlberta Curriculum](#)

APRDC [New Curriculum Professional Learning Resources](#)

[Alberta Science Curriculum Teacher Resources \(CMASTE\)](#): Click on the Teaching Resources Tab at the top of The Home Page.

This website hosts resources developed to support teachers in implementing the [Alberta Science Curriculum](#) initially released in 2023. The resources were created with support from the Centre for Mathematics, Science, and Technology Education (CMASTE) and contributions from students in the Faculty of Education, Elementary Education B.Ed. program. We will be continuing to add resources to this site, so please check back regularly.

[SLEAKs, SPAMs and SWAGs - Sciences Resources Developed by Red Deer Public Schools:](#)

The purpose of this guide is to assist any kindergarten teacher in their instruction of the new science curriculum. Within this document, you will find links to external sites and resources, as well as internal resources that are organized by the coordinators of RDPSD. This is certainly a dynamic document in that it is always changing; if you have any suggestions for modifications, please do not hesitate to contact the RDPSD science coordinator. Contact [Nate Siler](#) if you have any questions.

Lesser Slave Watershed Council [Classroom Presentations](#)

[Lesser Slave Forest Education Society](#) (they are updating their programs to match the new curriculum)

Comox Valley School District #71 - [Science Resources](#). BC Ministry of Education

Government of Canada Science Resources:

[Activity Books:](#)

Science is all around us and can be discovered, explored and used in so many ways! This new Activity Book showcases the diversity of the world of science through activities in health, energy, environment, agriculture, meteorology, astronomy, the living world and much more!

[Canadian Science - History and Achievements](#)

Select from 67 different entries of the history and achievements of Canadians in Science.

[Resource links](#)

Select from pages of activities, maps, lesson plans, videos etc. to support students of all age levels in science education.

- What Are Storylines? - [Next generation Science Storylines](#) - a good story line can lead to great Inquiry!
- [cK-12 - Free STEM teaching resources](#) - provides a set of online science textbooks as open educational resources. These are not aligned to NGSS but could be modified. See [Forces 1.1](#)
- **Backyard Science:** <https://www.ulnoowegeeducation.ca/programs/backyard-science/> A FREE online curriculum-connected and culturally connected educational resource.
- **PBS Learning Media - Science** - a large selection of science related resources. Review by subject, subtopic and grade.
- **Alberta Parks - Alberta Parks** - ABC [Nature Walk](#)
- **Hand2Mind Science Activities** - Lessons and Investigations for K-5 students Check

Websites and Resources to Support Planning

Inclusion - Best Practices Meeting the Needs of [All Learners in Science](#)
Differentiation: Preview vocabulary and pre teach to students. Use various forms of media to present vocabulary including simplified explanations, visuals in the form of diagrams to label and connect concepts.

Primary Connections (teacher guides, units of study and sample assessment rubrics based on Australian Science Curriculum but offers great links and activities to our curriculum)

Forces are at work in everything we do – we push to open doors, and pull to tie ropes. Gravity pulls on things to make them fall down or to keep them down. Scientists and engineers study forces to design better bridges and faster aeroplanes, and to reduce the forces that impact on people in car accidents. The Push-pull unit is an ideal way to link science with literacy in the classroom. The unit provides the opportunity for students to explore pushes and pulls. Through investigations, students observe and gather evidence about how these forces act in air and water, and on the ground. Students identify the effect of the pull of gravity and learn that both air and water can 'push'.



[Unit - Push and Pull](#)

[Assessment](#)

[Resources](#)

OR

Core Knowledge

Gizmos (Teacher Login Required)

New Learn Alberta:

ExploreLearning Gizmos Site:

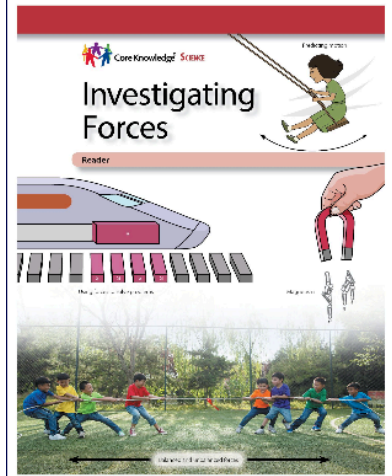
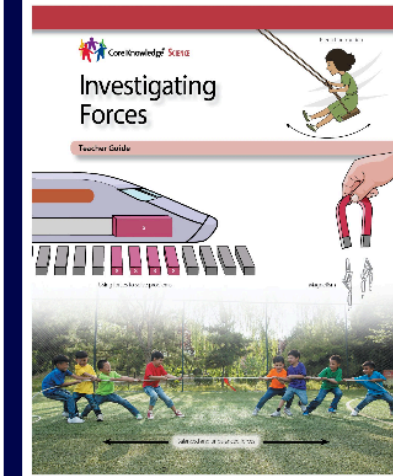

[Force and Fan Carts](#)

Request a Gizmos account: alberta@explorellearning.com

This unit introduces Grade 3 students to real-world examples and fundamental concepts of forces, which will be explored in greater depth in later grades. Students will learn about observable effects of balanced and unbalanced forces on an object's motion, describe and predict patterns of repeating motion, and explore how forces are associated with cause-and-effect relationships.

The relationship between forces and motion becomes clearer when students understand the following:

- A force is necessary to change an object's motion.
- If all the forces acting on an object are balanced, there will be no change in the motion of that object.
- An object at rest is under the influence of balanced forces. For example, a ball on the ground is pulled down by the force of gravity and pushed up by the force of the ground.
- Friction is a force that acts when surfaces are in contact.
- Magnetism is a force that can act from a distance to push or pull.

		
<p>CKSci Unit 1: Investigating Forces STUDENT READER</p> <p>The Student Readers offer engagingly written and richly illustrated text on the topics specified for the unit. Each volume includes color illustrations, vocabulary sidebars, and a glossary.</p> <p>Link</p>	<p>CKSci Unit 1: Investigating Forces TEACHER GUIDE</p> <p>The Teacher Guide provides detailed lesson plans for each Student Book chapter, as well as activity page masters, assessments, and additional activities to reinforce the lesson content.</p> <p>Link</p>	<p>CKSci Unit 1: Investigating Forces ONLINE RESOURCES</p> <p>The Online Resources includes a Pacing Guide, Material Supply List, and other helpful information for comprehensive classroom activities.</p> <p>Link</p>

Click to jump!

KUSPs

[3E1.1](#)

[3E1.2](#)

[Literature Connections](#)

KUSPs 3E1.2

Prerequisite Knowledge

Students know the terms **Force**, Contact Force, Strength, Direction, Interaction, Change, Property and Movement, and how they are applied to the movement of objects.

Misconceptions

Students may believe that:

- machines reduce the amount of work (they reduce the amount of force)
- machines and motorized objects are the same thing (not all machines are motorized)

I Know Statements

- I know that the effort needed to move objects is reduced by simple machines, such as levers, wheels & inclined planes.
- Many First Nations, Métis, and Inuit designed, tested, and continue to use simple machines, such as an antler wedge, a paddle & Inuit scraping tools; e.g., ulu.

I Understand Statements

- I understand that simple machines can change the strength and direction of forces.

Student Language | Essential Vocabulary & Concepts

[Concept Project](#)

- Simple Machine
- Effort
- Inclined Plane
- Lever
- Wheel

I Can Statements | Skills

- I can explore how simple machines reduce the effort needed to move objects.
- I can design a device that uses simple machines.
- I can safely work with tools, materials, and equipment.
- I can describe the purpose of simple machines used by local First Nations, Métis, and Inuit.

KUSP 3E1.2

Learner Outcome		3E1 Students investigate and explain how forces affect the movement of objects.		
Knowledge	Understanding	Skills & Procedures	Sample Activities & Resources What is Surface, Deep and Transfer	Assessments (formative)
<p>The effort needed to move objects is reduced by simple machines, such as</p> <ul style="list-style-type: none"> levers wheels inclined planes <p>Many First Nations, Métis, and Inuit designed, tested, and continue to use simple machines, such as</p> <ul style="list-style-type: none"> an antler wedge a paddle Inuit scraping tools; e.g., ulu 		<p>Explore how simple machines reduce the effort needed to move objects.</p> <p>Design a device that uses simple machines.</p> <p>Safely work with tools, materials, and equipment.</p> <p>Describe the purpose of simple machines used by local First Nations, Métis, and Inuit.</p>	<p>Sample Surface Level Activities</p> <ul style="list-style-type: none"> Simple Machines for Kids Youtube Video What are Simple Machines Youtube Video https://mfnerc.org/resource/simple-machines/ RDPSD Gr 3 Energy Presentation (slide 68 on) and Workbook Simple machines - Contrasting student and scientific views <hr/> <p>Sample Deep Level Activities</p> <ul style="list-style-type: none"> Levers - Designing an efficient lever. Grade 5 Forces and Simple Machines Lesson Guide Pages 49 - 55 Investigating using Pulleys Grade 5 Forces and Simple Machines Lesson Guide - p. 57 - 59 Simple Machine Design Project - includes card sorts for each type of machine by Science Companion (Digital Sampler) Investigations for Levers - Manitoba Ministry of Education Science Clusters, p. 5.82 - 5.93 Investigations for Wheel and Axle - Manitoba Ministry of Education Science Clusters, p. 5.93 - 5.95 Investigations for Gears - Manitoba Ministry of Education Science Clusters, p. 5.96 - 5.99 Investigation for Pulleys - Manitoba Ministry of Education Science Clusters, p. 5.102 - 5.107 ECSB - Build a Rube Goldberg Machine Curriculum Crate <hr/> <p>Infusing Indigenous Knowledge</p> <ul style="list-style-type: none"> Infusing Indigenous Knowledge into Curriculum (Grades 1-12) Main Website: 	<p>Assessment: Informal Formative</p> <ul style="list-style-type: none"> Ensure that students have participated with manipulatives that differentiate between the position of the fulcrum, the load, and the effort when using a lever to accomplish tasks. <p>Assessment: Formal Formative</p> <ul style="list-style-type: none"> Ensure that students have designed the most efficient lever to accomplish specific tasks <p>Task</p> <ul style="list-style-type: none"> From the simple machine you have used, select two or more to use together as a system of machines. Use this system to raise a book one meter. Test your solution to see how much force it took, and see if you can improve it in any way <p>The Easy Life</p> <ul style="list-style-type: none"> Think about a typical day in your life. What simple machines do you use over the course of the day? How do these simple machines make your life <p>Past and Present</p> <ul style="list-style-type: none"> Have students identify a simple machine used in the past and trace its development to the present day, highlighting major improvements (e.g., a bicycle). easier? Be specific. Source: Manitoba Ministry of Education Science Clusters Grade 5, p.5.112

Grade 3 Science:

- Visit and observe at various sites with Elders (e.g., buffalo no longer at Prairie Lake to keep it open).
- Share stories about stewardship and survival (e.g., how fish and meat was preserved, underground cooling, smoking and drying, berry picking, • Smoking and drying food and making a cache
- Making natural insect repellents (dry birch bark) and a container to carry it.
- Planning/making a land-based camp (e.g., no insect spray, sunscreen, phone, etc.) and making only whole food, your own toys and gear.



This is an antler wedge in the Royal BC Museum collection.

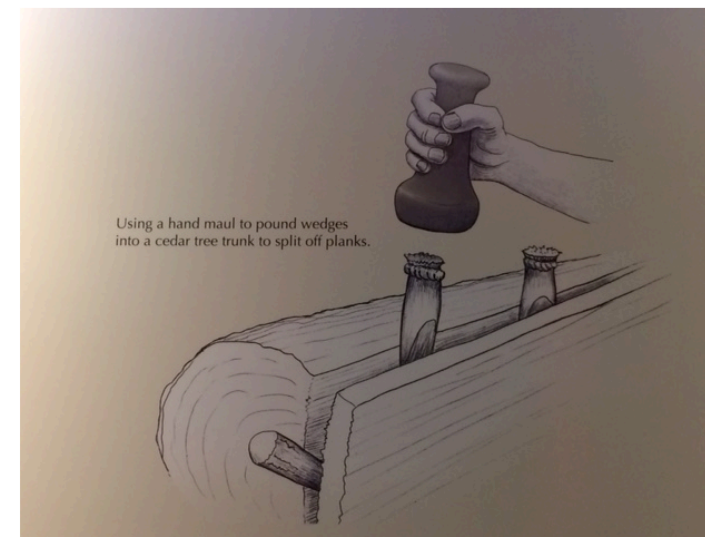


Illustration from the Royal BC Museum archaeology gallery of antler wedges and a stone hand maul being used for woodworking.

Credit: RBCM

			<p>Local/Nearby Options for Experiential Learning Excursions</p> <p>Other Resources</p> <ul style="list-style-type: none"> • What is a Simple Machine? (Britannica) (2:37) 	
	Simple machines can change the strength and direction of forces.	Explore how simple machines reduce the effort needed to move objects.	<ul style="list-style-type: none"> • Investigations for Levers - Manitoba Ministry of Education Science Clusters, p. 5.82 - 5.93 • Investigations for Wheel and Axle - Manitoba Ministry of Education Science Clusters, p. 5.93 - 5.95 • Investigations for Gears - Manitoba Ministry of Education Science Clusters, p. 5.96 - 5.99 • Investigation for Pulleys - Manitoba Ministry of Education Science Clusters, p. 5.102 - 5.107 	

Resources new

Additional Websites and Resources to Support *Learning*

Indigenous Related:

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Specific to Grade 3 Energy - Simple Machines

- [Energy Grade 3 - ARPDC Video](#)
- **PBS: Simple Machines** several selections about the simple machines are available depending on need and student interest.
- Next generation Science - includes the various [videos](#) for simple machines

Resources Developed by School Divisions/Educational Institutions

[Edmonton Catholic Pacing Guides](#)

[Edmonton Catholic Curriculum Crates](#)

[Edmonton Catholic Schools](#): Academic Vocabulary: Kindergarten to Grade 3

Edmonton Public [Science Snippets K-3](#)

Edmonton Public [Scope and Sequence](#)

[LearnAlberta Curriculum](#)

APRDC [New Curriculum Professional Learning Resources](#)

[Alberta Science Curriculum Teacher Resources \(CMASTE\)](#): Click on the Teaching Resources Tab at the top of The Home Page.

This website hosts resources developed to support teachers in implementing the [Alberta Science Curriculum](#) initially released in 2023. The resources were created with support from the Centre for Mathematics, Science, and Technology Education (CMASTE) and contributions from students in the Faculty of Education, Elementary Education B.Ed. program. We will be continuing to add resources to this site, so please check back regularly.

- [NSTA](#) - Sources of lessons, investigations and formative assessments for understanding simple machines. For a low cost there are also performance assessments.
- [Simple Machines](#) - SuperSTAAR - Several lessons, activities and videos related to the Grade 3 unit on Simple Machines.
- [Hand2Mind - Simple Machine Scavenger Hunt](#) - students will go on a scavenger hunt either in the school or at home to identify simple machines.
- [Let's Talk Science](#) - a large variety of sources for STEM - search your topic and gradeSelect any of the simple machines you would like information at this [link](#).
- [Teach Engineering - Simple Machines](#) this section includes lesson plans, activities and assessments.
- [Science North - Designing a Pulley](#) - activity. Also, lessons with activities found [here](#).
- [Science Buddies - Balance the forces within a mobile](#) - When you look at the mobile sculpture, you might wonder how it can stay balanced all the time even when it is moving in the air. In this activity, you will make your own mobile sculpture and find out how it stays balanced.

General Sites to Support a Variety of Concepts in Grade 3

- [Kids Academy](#): select from a variety of options to cover most topics in grade 3.
- [Ontario Council for Technology Education OTCE](#) - a variety of units available for download.
- [Next Generation Science: offers a variety of supports](#) - instruction and assessment, Planning and Communication.
- [Ontario Science Centre: Curriculum Resources](#) - Enter your topic into the search and refine what type of material you would like to preview.
- Instructional Planning and Teaching in Science - [IOWA Department of Education](#) -
- What Are Storylines? - [Next generation Science Storylines](#) - a good story line can lead to great Inquiry!
- [cK-12 - Free STEM teaching resources](#) - provides a set of online science textbooks as open educational resources.
- [Backyard Science: https://www.ulnoowegeeducation.ca/programs/backyard-science/](#) A FREE online curriculum-connected and culturally connected educational resource.
- [PBS Learning Media - Science](#) - a large selection of science related resources. Review by subject, subtopic and grade.
- [Alberta Parks - Alberta Parks](#) - ABC [Nature Walk](#)
- [Hand2Mind Science Activities](#) - Lessons and Investigations for K-5 students Check

Primary Connections (teacher guides, units of study and sample assessment rubrics based on Australian Science Curriculum but offers great links and activities to our curriculum)

Machine makers addresses *how a push or a pull affects how an object moves or changes shape*, in the context of creating Rube Goldberg machines.

Machine makers provides students with hands-on opportunities to:

- experience different ways to make objects move using ramps, levers, and pulleys
- explore the different strengths of pushes and pulls required to manipulate and control the movement of objects
- examine diagrams made by other inventors

Students apply their new learning by:

- designing and making their own Rube Goldberg machine using pushes and pulls

[SLEAKs, SPAMs and SWAGs - Sciences Resources Developed by Red Deer Public Schools:](#)

The purpose of this guide is to assist any kindergarten teacher in their instruction of the new science curriculum. Within this document, you will find links to external sites and resources, as well as internal resources that are organized by the coordinators of RDPSD. This is certainly a dynamic document in that it is always changing; if you have any suggestions for modifications, please do not hesitate to contact the RDPSD science coordinator. Contact [Nate Siler](#) if you have any questions.

Lesser Slave Watershed Council [Classroom Presentations](#)
[Lesser Slave Forest Education Society](#) (they are updating their programs to match the new curriculum)

Comox Valley School District #71 - [Science Resources](#). BC Ministry of Education

Government of Canada Science Resources:

[Activity Books:](#)

Science is all around us and can be discovered, explored and used in so many ways! This new Activity Book showcases the diversity of the world of science through activities in health, energy, environment, agriculture, meteorology, astronomy, the living world and much more!

[Canadian Science - History and Achievements](#)

Select from 67 different entries of the history and achievements of Canadians in Science.

[Resource links](#)

Select from pages of activities, maps, lesson plans, videos etc. to support students of all age levels in science education.

Websites and Resources to Support *Planning*

Inclusion - Best Practices Meeting the Needs of [All Learners in Science](#)

Differentiation: Preview vocabulary and pre teach to students. Use various forms of media to present vocabulary including simplified explanations, visuals in the form of diagrams to label and connect concepts.

Gizmos (Teacher Login Required)

New Learn Alberta:

[Ants On A Slant](#)

ExploreLearning Gizmos Site:

[Levers](#)

[Pulleys](#)

Request a Gizmos account: alberta@explorelarning.com



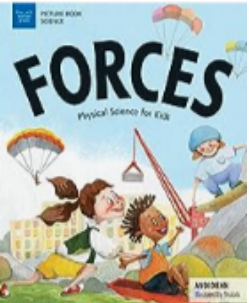
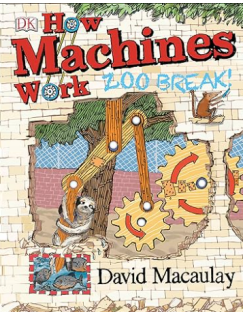
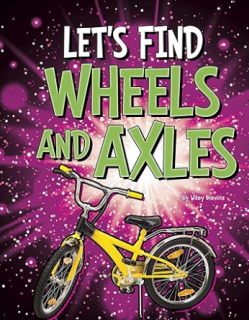
[Unit - Machine Makers](#)

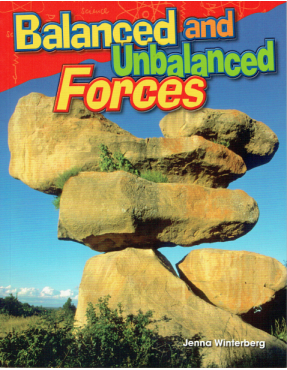
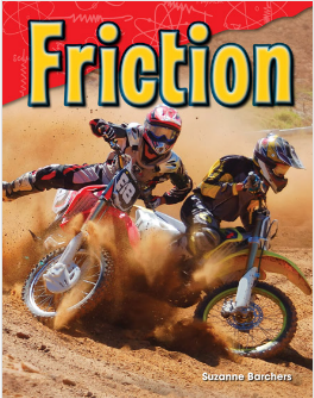
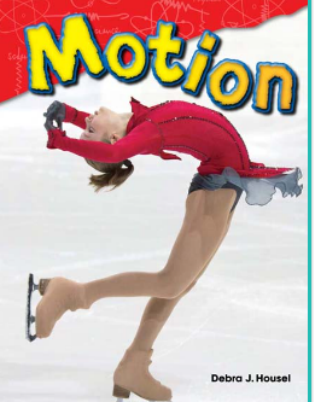
[Assessment](#)

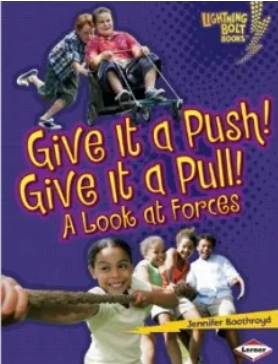
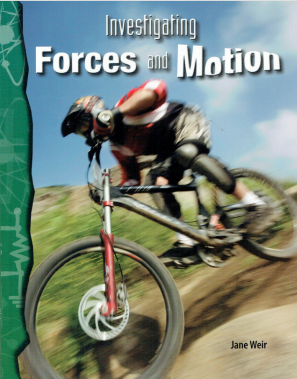
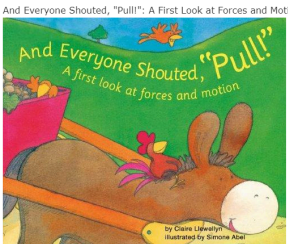
[Resources](#)

Literature Connections

KUSPs	3E1.1	3E1.2					
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Title & Author	Format (Picture Book, Novel, Non-fiction, other)	Publisher & ISBN	Book & Numbered Outcome Link
<p><i>Forces: Physical Science for Kids</i> by Andi Diehn and Hui Li</p> <p>What keeps us stuck on the ground? What makes magnets come together? What makes one team win during a game of tug of war? Forces! Our world operates the way it does because of forces. Gravity, magnetism, pulling and pushing forces, and friction are some of the many forces that affect the way we move on Earth. Kids are encouraged to observe and consider the different forces they encounter on a daily basis. Simple vocabulary, detailed illustrations, easy science experiments, and a glossary all support learning for kids ages 5 to 8.</p>	Picture Book, Non-Fiction	<p>Nomad Press</p> <p>10-1619306387 13-978-1619306387</p>	 <p>3E1.1 YouTube - EDU Kid Space</p>
<p><i>How Machines Work: Zoo Break!</i> by David Macaulay</p> <p>How Machines Work uses pop-ups and award-winning illustrations to demonstrate the technology of six simple machines. Follow the mad antics of Sloth and his side-kick Sengi as they try to break out of the zoo with the help of levers, pulleys, screws, inclined planes, wedges and wheels.</p>	Picture Book, Non-Fiction	<p>DK Children</p> <p>10-1465440127 13-978-1465440129</p>	 <p>3E1.2</p>
<p><i>Let's Find Wheels and Axles</i> by Wiley Blevins</p> <p>Did you ride a bike today? Then you've used wheels and axles! These simple machines are all around. Take a look inside and discover 13 different ways we use wheels and axles.</p>	Picture Book, Non-Fiction	<p>Capstone</p> <p>10-1398205087 13-978-1398205086</p>	 <p>3E1.2</p>

<p>Balanced and Unbalanced Forces by Jenna Winterberg</p> <p>Playing tug of war, pedaling a bike, jump roping - these actions all require force. We typically don't notice most of the forces around us, but they surround us all the time. Find out how force works in this fact-filled book. High-interest text paired with colourful images and graphics fill the pages of this book to engage students from cover to cover. Encourage students to apply what they've learned in the text by completing the Think Like a Scientist activity that supports STEM instruction included at the end of the book. A helpful glossary, table of contents, and index are also included for additional support.</p>	<p>Picture Book, Non-Fiction</p>	<p>Teacher Created Materials</p> <p>Available through Pearson, Canada</p> <p>10-1480746460 13-978-1480746466</p>	 <p>3E1.1</p>
<p>Friction by Suzanne Barchers</p> <p>Introduce students to the different types of friction with this science reader that features easy-to-read text. Nonfiction text features include a glossary, index, and detailed images to facilitate close reading and help students connect back to the text. Aligned to state and national standards, the book also includes a fun and engaging science experiment to develop critical thinking and help students practise what they have learned.</p>	<p>Picture Book, Non-Fiction</p>	<p>Shell Educational Publishing</p> <p>10-9781480746060 13-978-1480746060</p>	 <p>3E1.1/4E EPIC</p>
<p>Motion by Debra J. Housel</p> <p>Introduce students to the concept of motion with this science reader that features easy-to-read text. This book teaches important scientific topics and vocabulary including Newton's Laws of Motion, force, drag, and friction. Nonfiction text features include a glossary, index, and detailed images to facilitate close reading and help students connect back to the text. Aligned to state and national standards, the book also includes a fun and engaging science experiment to develop critical thinking and help students practise what they have learned.</p>	<p>Picture Book, Non-Fiction</p>	<p>Shell Educational Publishing</p> <p>10-148074607X 13- 978-1480746077</p>	 <p>3E/4E EPIC</p>

<p><i>Give It A Push! Give It a Pull! A Look at Forces</i> by Jennifer Boothroyd</p> <p>You push a swing. Your brother pulls a wagon. Forces are at work all around you. But what exactly is a force? And how do forces act on different objects? Read this book to find out!</p>	<p>Picture Book, Non-Fiction</p>	<p>Lerner Classroom 10-0761360565 13-978-0761360568</p>	 <p>3E1.1 EPIC</p>
<p><i>Investigating Forces and Motion</i> by Jane Weir</p> <p>Forces can't be seen, but without them, nothing around us would happen! A force is a push or pull that usually causes movement. Friction is a force that opposes motion and slows things down or stops them. Famous scientist and mathematician Sir Isaac Newton wrote the rules about forces and motion.</p>	<p>Picture Book, Non-Fiction</p>	<p>Shell Educational Publishing 10-0743905733 13-978-0743905732</p>	 <p>3E1.1/4E</p>
<p><i>And Everyone Shouted Pull! A First Look at Forces and Motion</i> by Claire Llewellyn</p> <p>Learn about forces and motion as you join the farm animals on their trip to the market. The wheels on their cart help when they push, pull and stop on their journey.</p>	<p>Picture Book, Non-Fiction</p>	<p>Hodder & Stoughton 10-0750238038 13-978-0750238038</p>	 <p>3E1.1</p>
<p><i>Forces</i> by Debra J. Housel</p> <p>A force is a push, a pull, or a turn. Every force has an equal and opposite force. Forces are always with you! They are all around us. Learn about forces with this science reader that features easy-to-read text. Nonfiction text features include a glossary, index, and detailed images to facilitate close reading and help students connect back to the text. Aligned to state and national standards, the book also includes a fun and engaging science experiment to develop critical thinking and help students practice what they have learned.</p>	<p>Picture Book, Non-Fiction</p>	<p>Shell Educational Publishing 10-1480746045 13-978-1480746046</p>	 <p>3E1.1/4E</p>