

CURRICULAR CONNECTIONS – NUMERACY K-5

The Curricular Connections are intended to show how aspects of Literacy and Numeracy can be used to support deeper learning in all areas of the BC curriculum. Incorporating Literacy and Numeracy supports students' development, practice, and demonstration of the learning area curricular competencies. The following examples were created by BC teachers to connect Numeracy with the curricular competencies, to inspire personalization to your students' interests and your local context, and to differentiate learning for the needs of your students. These connections are meant to be illustrative and not exhaustive.

Aspect	Grade band	Learning area	Curricular Competency	Student learning opportunity
<ul style="list-style-type: none"> ● Sub-aspect 				
Interprets <ul style="list-style-type: none"> ● Understands the real-world problem ● Extracts relevant information ● Identifies parameters and limitations 	K-1	Career Education (K/1)	Identify and appreciate their personal attributes, skills, interests, and accomplishments	In a group discussion, students talk about their personal interests and skills, which the teacher sorts and records on a Venn diagram. The students guess, identify, and discuss why the terms are placed accordingly.
	2-3	Science (3)	Co-operatively design projects	Students discuss, develop, and prioritize criteria for the size, placement, and position of beehives. They identify parameters and limitations, like predators, access to flowering plants, and placing the hives away from those who are allergic to bees.
		Physical and Health Education (2/3)	Physical literacy: Develop and demonstrate safety, fair play, and leadership in physical activities	As part of a larger task to create an outdoor game, students play several types of games with a teacher who models physical safety and fair play. In groups, students start to plan their game by determining safe boundaries and marking them. They also determine the timing and rules of the game so that every student remains active for a specified number of minutes.
	4-5	Science (4)	Suggest ways to plan and conduct an inquiry to find answers to their questions	Students investigate different materials that claim to insulate. They compare the materials with each other, as well as with advertised ratings and units (e.g., "Keeps liquids hot for 15 hours!" or "Rated to -10°C"). As a class, students discuss their understanding of insulators, and identify a way to compare the advertised claims of heat insulation, using the same testing method and units.
		Arts Education (5)	Describe and respond to works of art and explore artists' intent	Patterns play an important part in art. Students note themes in the art of different First Nations (e.g., Coast Salish and Northwest Coast) by observing and identifying embedded patterns. They then describe the patterns using words or numerals.

Applies <ul style="list-style-type: none"> • Translates scenario into a mathematical problem • Represents the mathematical problem • Develops a plan of approach 	K-1	Science (K) Make simple measurements using non-standard methods	Students record the weather daily, using self-designed observations and measurements. For example, a student could measure the amount of rain against the height of a chosen object and record the numbers in a journal.
		Social Studies (K/1) Explain the significance of personal or local events, objects, people, or places (significance)	Students are asked to investigate how many community members use a park playground during the school day. They make their own plan for what to measure, such as the number of different people in the park, and how to record their observations (e.g., tallies, manipulatives, numerals).
	2-3	Career Education (2/3) Demonstrate effective work habits and organizational skills appropriate to their level of development	Students create a learning goal that requires practice for mastery. They brainstorm different ideas, such as increasing the accuracy of a hockey shot, playing a musical instrument, or learning to read. Students then create a plan detailing the time and frequency of practice needed to meet their goal, as well as a measurement for knowing how they have attained their goal.
		Math (2/3) Develop mental math strategies and abilities to make sense of quantities	Students explore different ways of saying and representing numbers in different languages that promote a sense of number decomposition and composition (e.g., <i>quatre-vingts</i> in French [four twenties = eighty], <i>shí wǔ</i> in Mandarin [ten five = fifteen], 'apun 'i' kw' xu'athun in Hul'qumi'num [ten and four = fourteen]). They represent the number/word decompositions visually with pictures or manipulatives.
	4-5	Physical and Health Education (4/5) Identify and describe opportunities for and potential challenges to participation in preferred types of physical activity at school, at home, and in the community	Students develop a survey to interview local community members (e.g., family members, other students, neighbours) to find out about local needs for better access to community spaces, such as playgrounds, parks, or gyms. Students learn about different quantitative and qualitative survey questions in order to obtain the information they need to answer their research question.
		Math (5) Represent mathematical ideas in concrete, pictorial, and symbolic forms	Students learn about the Fibonacci sequence and where it can be found in nature. They go outside and collect natural found objects. In small groups or partners, students then use the objects to represent the Fibonacci sequence in a visually appealing way. They explain with words and numerals how their art piece demonstrates the pattern found in the Fibonacci sequence.

Solves <ul style="list-style-type: none"> Estimates reasonably in context Solves the mathematical problem Verifies accuracy of mathematical solution 	K-1	Arts Education (K/1) Explore elements, processes, materials, movements, technologies, tools, and techniques of the arts	Students explore symmetry by tracing and cutting out hearts in two ways. They predict which heart will be "neater." First, they use a stencil to trace and then cut the first heart. In a second method, they fold paper in half and trace half the heart, then cut. Through discussion, students develop a class definition of symmetry and compare the hearts created with the two methods.
		Math (K/1) Estimate reasonably	Students explore coins and financial literacy. They think of their favourite healthy snack and estimate how much it costs. They then visit a store or look on a website/flyer advertisement with a teacher to find out the actual cost of the snack. Students incorporate more accurate estimations of grocery store prices during role-play (i.e., customer-store clerk) or make signs for food prices.
	2-3	Social Studies (2/3) Explain why people, events, or places are significant to various individuals and groups (significance)	Students create a map of significant places in their local area. They document the location with reference to landmarks and describe the significance of the place. Students then mark on the map a path connecting the places, estimating the time/distance between each place, and the route and time needed to walk/drive/take public transportation between each place. This activity could be differentiated by using grid paper, sketching, or using paper maps or map apps or websites.
		Applied Design, Skills and Technology (2/3) Use trial and error to make changes, solve problems, or incorporate new ideas from self or others	Students design a catapult (e.g., a marshmallow catapult using a plastic spoon) using various materials provided, such as popsicle sticks, elastic bands, or glue. They test their catapults to see which one launches a marshmallow the farthest, using the average of five trials. Students discuss why using an average of five trials is a more accurate test than using the results of just one trial.
	4-5	Science (4) Identify some simple environmental implications of their and others' actions	Students estimate how much electricity they use in their home (teachers can provide students with sample estimates for using electric ovens, clothes dryers, and various appliances, using this BC Hydro estimator). Students make weekly and monthly calculations. They then compare their calculations with the actual amount (e.g., using a sample family's hydro bill), and think of practical ways to reduce energy use, given their own family's needs and context.

		Science (5)	Observe, measure, and record data to collect to answer their question	Students learn about food security by growing seeds in small containers in the classroom. They record the growth of the seeds through scientific drawing and recording measurements. Students also learn about different sustainable agricultural practices used by local First Nations, and then use this knowledge to grow their seeds in different conditions, such as intercropping. They estimate the impact of these factors on the growth of plants to help answer the question, How can we increase the growth of food crops to aid with food security?
Analyzes <ul style="list-style-type: none"> • Reflects on reasonableness of solution in context • Evaluates alternative approaches • Revises approach as needed 	K-1	English Language Arts (K/1)	Use personal experience and knowledge to connect to stories and other texts to make meaning	Students are asked to keep track of the number of personal connections they make while listening to a story, either through writing or drawing. They discuss with a partner the connections and then compare and contrast why they may have different numbers of connections. Students can also reflect on the number of personal connections they made in a different story, and why they made a different number of connections.
		Science (1)	Make simple predictions about familiar objects and events	Students learn about the needs of plants and animals. With a partner, students match pictures of animals with their needs, such as habitat or food. The students discuss with a partner the reasonableness of the matches, as well as generalizations (e.g., larger animals need bigger environments and more food).
	2-3	Arts (2)	Express feelings, ideas, stories, observations, and experiences through creative works	Students listen to several spoken-word poems, either read aloud by the teacher or from a recording. They then choose a spoken-word poem and vary the tempo or volume of the overall piece or of different lines within the poem. As a whole class, students reflect on how changing the volume or tempo changes the tone or mood of the communication. They then revise the volume or tempo within their spoken-word poem to change the tone or mood.
	4-5	Social Studies (5)	Differentiate between intended and unintended consequences of events, decisions, and developments, and speculate about alternative outcomes (cause and consequence)	Students are provided with a list of non-perishable food that was typically taken on long journeys by seafarers or travellers. They make estimates of provisions required for a long journey (e.g., the amount of food required to sustain a person for weeks at sea). Students use their estimates to reflect on and discuss the discriminatory nature of the Continuous Journey Regulation and the <i>Komagata Maru</i> .
		Science 5	With support, plan appropriate investigations to answer their questions or solve problems they have identified	Students are tasked with creating a simple machine that transfers potential to kinetic energy. They first draft a plan of the machine and show with diagrams what they expect to happen. They label where potential energy is converted to kinetic energy (such as a ball rolling down a ramp). After trialling the machine, students reflect on its success and identify the revisions they must make to improve it, such as increasing the angle of the ramp, and how this change will affect motion.

Communicates <ul style="list-style-type: none"> • Represents processes and solution • Explains approach taken • Defends decisions and assumptions 	K-1	Applied Design, Skills, and Technologies (K/1)	Demonstrate their product, tell the story of designing and making their product, and explain how their product contributes to the individual, family, community, and/or environment	Students work in groups to build marble mazes with provided materials such as cardboard, glue sticks, scissors, construction paper, and popsicle sticks. Each group receives a different building challenge (e.g., the greatest number of turns, steepest ramp, biggest jump). The students explain their iterative decision-making process, and how making changes in their structure helped them meet their challenge.
		Physical and Health Education (K/1)	Healthy and active living – Identify and explore a variety of foods and describe how they contribute to health	Students identify and select a variety of foods that they enjoy and include their choices for a picnic lunch menu for their families and/or friends. They create a labelled visual representation (a drawing of food, with quantities) of their picnic menu to explain their choices to the group.
	2-3	Math (3)	Visualize to explore mathematical concepts	Students use a balance scale and standard weights to visualize and compare real-life objects with 10 g, 100 g, and 1000 g weights. They draw or take photos of the real-life objects for display on a bulletin board. They also describe characteristics of the objects of the different orders of magnitude, to help observers further visualize a sense of mass.
		Applied Design, Skills, and Technologies (3)	Demonstrate their product, tell the story of designing and making their product, and explain how their product contributes to the individual, family, community, and/or environment	Students use Scratch , a free, web-based programming language to create a short animation. They try to achieve their goal with the smallest number of lines of code. Students explain how they created their animation and why they chose certain lines of code.
	4-5	Français langue première (5)	Express oneself with accuracy and fluency using the strategies studied	Students make plans to travel to a Francophone and Métis event, such as <i>Festival du Bois</i> in Maillardville, Coquitlam, <i>Festival du Voyageur</i> in Manitoba, or <i>Bonhomme Carnaval</i> in Quebec. They create a budget for travel, accommodation, and food as needed. They also plan a schedule to allow them to take part in the experiences offered. Students then create a plan to raise funds in order to provide equitable access to the festival and create a fundraising message communicating the purpose of the funds.
		Social Studies (5)	Develop a plan of action to address a selected problem or issue	Students learn about the United Nations Sustainable Development Goals . They choose a social justice issue and identify the goal that is working to remedy the issue. Students find the data provided on the UNESCO website demonstrating the progress that has been made. They then present a personal action they can take to support their Sustainable Development Goal, justifying their action given the data.

		Science (5)	Construct and use a variety of methods, including tables, graphs, and digital technologies, as appropriate, to represent patterns or relationships in data	Students research heart rate and optimal fitness heart rate for their age and weight. They brainstorm different activities and collect data regarding their heart rates after doing an activity for a specified length of time. Students create and present a visual representation of their findings, such as a graph, chart, or infographic.
		Career Education (5)	Set realistic short- and longer-term learning goals, define a path, and monitor progress	Students set a financial goal of saving for an item that they want. They set a budget, identify their weekly income and expenses, and determine how many weeks it will take to reach their goal. At the end of the unit, students reflect on their overall goal, budget, and savings plan, and defend the decisions that they made.

CURRICULAR CONNECTIONS – NUMERACY 6-12

The Curricular Connections are intended to show how aspects of Literacy and Numeracy can be used to support deeper learning in all areas of the BC curriculum. Incorporating Literacy and Numeracy supports students' development, practice, and demonstration of the learning area curricular competencies. The following examples were created by BC teachers to connect Numeracy with the curricular competencies, to inspire personalization to your students' interests and your local context, and to differentiate learning for the needs of your students. These connections are meant to be illustrative and not exhaustive.

Aspect • Sub-aspect	Grade band	Learning area	Curricular Competency	Student learning opportunity
Interprets <ul style="list-style-type: none"> • Understands the real-world problem • Extracts relevant information • Identifies parameters and limitations 	6-7	English Language Arts (6/7)	Apply appropriate strategies to comprehend written, oral, and visual texts, guide inquiry, and extend thinking	<p>Students select a changemaker – a person who has changed the world – and then research, review, and select evidence (data) that quantifies the impact of their selected changemaker.</p> <p>Possible research questions:</p> <ul style="list-style-type: none"> • What facts and numerical data support the argument that your changemaker made a lasting, wide-reaching impact? • What information/evidence is missing in your research?
		Social Studies (6)	Ask questions, corroborate inferences, and draw conclusions about the content and origins of a variety of sources, including mass media (evidence)	Students are provided with two different infographics related to a social issue, such as pipelines. Each infographic should show different perspectives on the issue, such as cost benefit, job creation, environmental impact, and public perception. Students then create a list of questions about the infographics to further refine their understanding of important information that is and is not shared.
	8-9	Science (8)	Collaboratively plan a range of investigation types, including field work and experiments, to answer their questions or solve problems they have identified	Students collaboratively create a set of parameters and limitations for an experiment and create a procedure that fits within the limitations. For example, students must consider weight, space, and time limitations when creating a plant experiment that could be conducted in the International Space Station.
		Career Education (8/9)	Question self and others about how individual purposes and passions can support the needs of the local and global community when considering career choices	Students research local community needs that connect with career paths. They generate lists of local needs based on data (e.g., the need for general practitioners across the province) and highlight any parameters and limitations (e.g., years of schooling and cost, program requirements) for each career path.
		Math (9)	Connect mathematical concepts to each other and to other areas and personal interests	Students are provided with two different data sets of demographic information, one from Statistics Canada and another from a survey company. Students create a list of questions and specific information they need to know about the data or limitations of the data set (e.g., inherent bias, privacy considerations, cultural sensitivity practices used during data collection), to refine their understanding of important information that is or is not shared.

	10-12	Math (Workplace Math 10)	Use mathematical vocabulary and language to contribute to discussions in the classroom	Students find and collect graphs presented in traditional or social media depicting a current issue, such as vaccinations or crime rates. They interpret and discuss how graphical representations of statistics can skew perception. They also discuss how the graph format could lead to intended and unintended misunderstandings of data and interpretations of trends.
		Social Studies (Human Geography 12)	Draw conclusions about the variation and distribution of geographic phenomena over time and space (patterns and trends)	Students research and compare a locally grown or produced food with food that is imported domestically or internationally. They study the impact on jobs and the economy of local versus non-local products by collecting and interpreting data and statistics regarding local growing seasons, impacts of weather and lost crops, price differences, travel times/shipping distances, tariffs, or other economic factors within the supply and delivery chain.
		Science (Chemistry 11)	Make observations aimed at identifying their own questions, including increasingly abstract ones, about the natural world	Students consider Avogadro's number in terms of everyday objects to make sense of the number of particles in a mole. They visualize Avogadro's number, using everyday objects, such as a mole of sugar cubes or coins, and estimate by approximate calculations how much surface area/height on Earth would be covered by one mole of the item. Comparing these visualizations with images of various mole samples, students make connections between Avogadro's number and a mole, and to the infinitesimally small size of an atom.
		Social Studies (Physical Geography 12)	Evaluate how particular geographic actions or events affect human practices or outcomes (geographical value judgments)	Students investigate the impacts of various geological events, such as earthquakes or volcanic eruptions, on humans. They identify various potential human impacts, such as building collapse or loss of life, and define their own four-point scale to assess the breadth of impact on people and society. They use the four-point scale and supporting evidence as parameters to understand the effect of the event.
Applies <ul style="list-style-type: none"> • Translates scenario into a mathematical problem • Represents the mathematical problem 	6-7	Science (7)	Observe, measure, and record data (qualitative and quantitative), using equipment, including digital technologies, with accuracy and precision	Students are provided with the tools to create an electric current. They develop a plan for how they will observe, measure, and record quantitative measurements and qualitative observations of current or voltage.
		Social Studies (6)	Differentiate between short- and long-term causes, and intended and unintended consequences of events, decisions, or developments (cause and consequence)	Students research the short- and long-term consequences of the development of different modes of transportation over time (e.g., changes brought by the development of the Canadian Pacific Railway). They brainstorm factors and statistics that could represent these consequences, such as the spatial location of towns, the number of immigrants to Canada, or the population of western cities like Vancouver. Students then represent these changes visually in an infographic.

<ul style="list-style-type: none"> Develops a plan of approach 		Applied Design, Skills, and Technologies (7)	Identify the personal, social, and environmental impacts, including unintended negative consequences, of the choices they make about technology use	Students research the development and impacts of technology innovations and create a mathematical visualization, such as graphs of popularity and use (e.g., the increasing use of cell phones over time, compared with the amount of e-waste) to compare the impacts on society.
	8-9	Social Studies (8)	Characterize different time periods in history, including periods of progress and decline, and identify key turning points that mark periods of change (continuity and change)	Students compare demographic statistics (e.g., literacy rates, average wage) for a certain population (e.g., adolescents) before and after a significant event (e.g., the Industrial Revolution). They then make a plan regarding their choice of the evidence to present to answer the question, Where they might find data, and the type of graph needed to present their data to help them answer the question.
		Math (9)	Visualize to explore mathematical concepts	<p>Students construct graphs, models, and/or diagrams that communicate the same content, translating information from and between:</p> <ul style="list-style-type: none"> a numeric data set an algebraic equation a graph <p>For example, students can investigate the design of a flag, making a plan to represent the design on a cartesian plane using a graphical representation, deducing the algebraic equations for the lines, and a data set of points on the lines.</p>
	10-12	ADST (Entrepreneurship and Marketing 10)	Engage in a period of research and empathetic design	Students identify a need/desire in their school or community (e.g., new playground, new water fountain, more computers, new sports equipment, new logo, yearbook cover) and create a survey to determine which school/community need is most important to the school/community population. Students then create a business plan, including a timeline and budget, to present to funding partners.
		Science (10)	Collaboratively and individually plan, select, and use appropriate investigation methods, including field work and lab experiments, to collect reliable data (qualitative and quantitative)	Students plan an experimental method to test a hypothesis in which the experiment's conditions must make sense within real-world parameters (e.g., the effect of temperature on solubility of a salt in water: conditions should be in a range between -5 and 105 degrees Celsius, so that most of the water remains in liquid state).
		Physical and Health Education (10)	Describe the relationships between physical activities, mental well-being, and overall health	Students establish a rating scale for their own personal well-being (e.g., daily emotions, heart rate, number of positive thoughts). They try a physical activity of their choosing (e.g., yoga) over the course of a month and record their well-being rating after each activity. Students organize ratings using a personally appropriate method, such as a table in a journal.

		Social Studies (Urban Studies 12)	Explain and identify the forces that shape opinions and decision making on current issues related to urban studies (perspective)	Students create a proposal and budget to revitalize an area of their community through public art. They investigate and describe how revitalization of the area could have social and economic impacts. In their proposal, students research and use data about the site and community to develop a plan of approach (including consultation, timeline, and budget) to revitalize the area. They must also include a plan as to how to measure the impact of the use of public art.	
Solves <ul style="list-style-type: none"> Estimates reasonably in context Solves the mathematical problem Verifies accuracy of mathematical solution 	6-7	Arts Education (6/7)	Intentionally select, apply, combine, and arrange artistic elements, processes, materials, movements, technologies, tools, techniques, and environments in art making	Students work collaboratively to create mashups of songs. They might arrange songs based on theme, tempo, time signature, or emotion. They use various methods (e.g., trial and error) and tools to vary the tempo of different songs in order to smoothly integrate them.	
		Science (7)	Experience and interpret the local environment	Students use quadrats or field squares to record observations of plant life in a sample space in a local area. Students use this sample and calculate, using proportional reasoning, an estimate of the diversity of plant life in the local area. They compare their estimate against actual counts of biodiversity in the area or against their classmates' calculations.	
		French (6/7)	Express themselves and comprehend others through various modes of presentation	Students translate into French a favourite recipe, including ingredients and measurements, measurement tools, step-by-step instructions, and photos, for their French pen pal or classmate to try. Students must convert to metric measurements in the instructions and have their partner verify their calculations by making the recipe themselves.	
	8-9	Applied Design, Skills, and Technologies (8/9)	Identify criteria for success and any constraints (8) Identify criteria for success, intended impact, and any constraints (9)	Identify criteria for success and any constraints (8) Identify criteria for success, intended impact, and any constraints (9)	In a larger project, students create a computer game that simulates the development of a town or neighbourhood. In one aspect of the project, students make various calculations about how time will pass within the game in order to keep the pace of the game enjoyable. Students must also do calculations to ensure that town sites are proportional and realistic in size.
		Science (9)	Evaluate the validity and limitations of a model or analogy in relation to the phenomenon modelled	Evaluate the validity and limitations of a model or analogy in relation to the phenomenon modelled	Students use Ohm's law ($V=IR$) to estimate the effect of changing each variable within a circuit. They then use an online simulator, such as PhET, to model the effect of changing the variable, build the circuit with electricity materials, and measure the real-world effect. Students discuss the source of discrepancies between the calculated, modelled, and actual values.

	10-12	ADST (Automotive Technology 11)	Develop an appropriate test, conduct the test, and collect and compile data	Students design a test to verify the published fuel consumption of three different vehicles. They compare their results with published ranges and discuss reasons for discrepancies. Students also compare results of different replicates and then discuss the reliability of their method, possible improvements to the method, and how to improve the precision from repetition to repetition.
		Science (Chemistry 11)	Seek and analyze patterns, trends, and connections in data, including describing relationships between variables, performing calculations, and identifying inconsistencies	Students consider the trends found on the periodic table, graphing numerical data, such as atomic radius, first ionization energy, or electronegativity. They analyze the trends across a period or down a group, looking for outliers, and use sources like the textbook or lesson notes to explain exceptions to the trends.
		Social Studies (20th Century World History 12)	Use historical inquiry processes and skills to ask questions; gather, interpret, and analyze ideas and data; and communicate findings and decisions	Students create population pyramids/age-sex pyramids (line bar graphs) demonstrating different population distributions during certain periods, and then use the graphs as evidence to categorize populations as stationary, expansive, or constrictive. They also determine the impact of historical events (e.g., the “bulge” of the post-World War II baby boom and its subsequent impacts on population), as well as determiners of a population’s future. Students use further demographic statistics to verify their predictions and explanations.
Analyzes <ul style="list-style-type: none"> • Reflects on reasonableness of solution in context • Evaluates alternative approaches • Revises approach as needed 	6-7	Social Studies (6)	Make ethical judgments about events, decisions, or actions that consider the conditions of a particular time and place, and assess appropriate ways to respond (ethical judgment)	Using given data or graphical representations, students consider the reasons for the purchase of the Kinder Morgan pipelines in 2018: What were the economic and social conditions in Canada at that time? What were the financial needs of different provinces? What were reasonable financial and environmental alternatives? Was the price reasonable?
		Social Studies (7)	Make ethical judgments about past events, decisions, or actions, and assess the limitations of drawing direct lessons from the past (ethical judgment)	Using Hammurabi’s Code of Law, students look at the values of different crimes to investigate which of the punishments seem to be reasonable given the conditions of life in Mesopotamia. For example, students consider the value of food that had been stolen at that time compared with today, and the consequences of the historical versus modern punishment.
		Science (6)	Decide which variable should be changed and measured for a fair test	When exploring force and motion with balloon cars, students choose one variable to change and one variable to measure. They conduct preliminary experiments in order to choose their variables: they change the independent variable and measure the effect on different dependent variables. Students evaluate their options for independent and dependent variables and choose the best measurement approach and tool for their experiment.

	8-9	Science (8/9)	<p>Reflect on their investigation methods, including the adequacy of controls on variables (dependent and independent) and the quality of the data collected (8)</p> <p>Describe specific ways to improve their investigation methods and the quality of data (9)</p>	<p>Students reflect on data collected in preliminary experiments by comparing their findings with those of other students and/or data found through modelling or calculations. Students adjust their procedures to improve the accuracy and precision of their data when compared with accepted values.</p>
		English Language Arts (8/9)	<p>Assess and refine texts to improve their clarity, effectiveness, and impact according to purpose, audience, and message.</p>	<p>Students prepare speeches on a topic of interest. In a separate class period, students are asked to speak extemporaneously on the same topic. Students count the number of “filler words,” such as “um” or “like,” or other, personally defined measures, such as shifting stance, pacing, or over-gesturing. They then discuss the best way to prepare for a speech, creating the method that works best for them (such as an outline), and using their selected measures to gauge their improvement.</p>
	10-12	Math (Pre-calculus 11)	<p>Develop thinking strategies to solve puzzles and play games</p>	<p>Students create flowcharts to evaluate the outcomes of different moves in chess when given a particular board configuration. They discuss potential opponent moves and consider (with calculations) the reasonableness of success and the probabilities for each of their moves.</p>
		Science (Physics 12)	<p>Evaluate the validity and limitations of a model or analogy in relation to the phenomenon modelled</p>	<p>Students study elastic and inelastic collisions, including completing associated calculations. They discuss the reasonableness of observing perfectly elastic/inelastic collisions in the real world, discussing where the energy is transferred and what observers see as a result.</p>
		Physical and Health Education (Outdoor Education 11)	<p>Demonstrate awareness of cultural and place-based sensitivities regarding the use of outdoor locations</p>	<p>Students research the costs (e.g., for entrance, gear, safety, time) of accessing outdoor locations, such as ski hills, hiking trails, parks, and golf courses. They evaluate the level of equitable access to each location and make recommendations to reduce access barriers.</p>
	Communicates	6-7	Social Studies (6)	<p>Take a stakeholders’ perspective on issues, developments, or events by making inferences about their beliefs, values, and motivations (perspective)</p>
<ul style="list-style-type: none"> Represents processes and solution 				

<ul style="list-style-type: none"> Explains approach taken Defends decisions and assumptions 		English Language Arts (6/7)	Exchange ideas and viewpoints to build shared understanding and extend thinking	Students study the novel <i>No Fixed Address</i> , by Susin Nielsen. They research statistics on poverty in their local area and represent their research in the form of bar graphs for analysis and discussion. They present their perspectives to their peers, using the graphs as evidence. The teacher leads a discussion to understand the causes and effects of poverty as documented in other texts, like newspaper articles, personal stories, and documentaries, to explore different perspectives and encourage students not to rely solely on data.
	8-9	Career Education (8/9)	Explore volunteer and other new learning experiences that stimulate entrepreneurial and innovative thinking	Students create a business plan for a community service, such as tutoring younger children in reading. They look at the operating costs of similar organizations and create a grant proposal for community funding. They then present their business plan, including justification for their budget, to their peers.
		Applied Design, Skills, and Technologies (8/9)	Identify (8)/Evaluate (9) the personal, social, and environmental impacts, including unintended negative consequences, of the choices they make about technology use	Students collect data (e.g., via survey or poll) about social media use in the school community and create original animations or videos to communicate their learning about the positive and negative outcomes of social media use by teens. Students justify their video message using the data collected.
		Français langue première (9)	Use different stylistic elements to create an effect on the recipient	Students take on an issue of personal importance and do one small thing to change it, such as biking or walking to school instead of driving, to reduce carbon emissions. They research and calculate the effect of their personal effort. Students write letters about the issue to a government official, like the mayor, a city councillor, or their MLA. The student encourages others to apply that same change, proportionally scaling their personal change to a community-level change. The student cites other statistics to further support their call to action.
	10-12	English First Peoples (12)	Analyze the influence of land/place in First Peoples texts	In the novel <i>Monkey Beach</i> , by Eden Robinson, the main character must travel by boat down the coast from Kitimat to Vancouver. There are many obstacles and events in this journey, as well as significant locations, which all can be represented spatially. Students highlight the importance of land and setting in the story by creating and presenting spatial representations of travel, maps, or timelines (e.g., distances between locations, specific story places). Students describe certain points of the journey, as well as the main character's decision-making process. They highlight the effect of these decisions on plot elements like the distance travelled or money spent, and represent these cause-and-effect relationships in their visual representation.

		Social Studies (Francophone History and Culture 11)	Assess how prevailing conditions and the actions of individuals or groups influence events, decisions, or developments (cause and consequence)	Students use statistics like political party popularity, referendum votes/results, frequency of mentions in media articles, or other events to analyze the causes and consequences of the Quebec referendums of the 1980s and 1990s. Students use data to justify and defend their conclusions, noting where assumptions were made or where more evidence is needed.
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