# Bachelor of Education (Elementary)

# Science Unit Plan Template– Winter 2023

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| **Unit Title:** | Solutions and Solubility | **Number of Lessons:** | 10 | **Days:** | 10 |
| Your Name: | Jennilee Fraser | Subject(s): | Science | Grade: | 5/6 |

**Rationale**

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| My goal is to reintroduce students to the concept of solutions and solubilities they started learning in grade 4 and 5, expanding on those concepts to help them better understand what solutions are, why they matter and are present in everyday life. I have incorporated First Peoples Principles through concepts of communication and collaboration (coyote), thinking and reasoning (salmon) and perseverance and courage while learning (salmon/bear), as well as experimentation with Indigenous tea mixtures. It is important to have simplified and separated each concept into its own lesson to help guide students through these concepts in slow and manageable chunks. I have incorporated concepts of baking and beverage preparation to make real world connections with the content and integrate music and songwriting as a mnemonic device. |

Overview

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| Lesson 1: What is a solution - Perfect cup of lemonade  Lesson 2: Solutions separated through crystallization - Kool Aid rock candy  Lesson 3: Heterogenous Solutions and Emulsion - Lava lamps  Lesson 4: Solvents, Solutes and Suspensions – Dissolving items in water  Lesson 5: Colloids - Slime  Lesson 6: What are insoluble substances? - Raised salt painting  Lesson 7: What is a saturated solution? - Salt water buoyancy  Lesson 8: First Peoples - Organic fabric dye  Lesson 9: First Peoples - Tea brewing  Lesson 10: Unit Test |

Indigenous Connections/ First Peoples Principles of Learning

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| **Learning recognizes the role of Indigenous knowledge** → In this unit I hope to incorporate Indigenous knowledge on solutions, solubility, and extraction. For many years, Indigenous peoples used these techniques to extract medicinal properties from plants and roots, used mixtures and solutions whilst brewing teas, and even used extraction and solubility techniques to get oil from fish and syrup from trees.  **Learning involves patience and time** → In this unit I may be introducing ideas and concepts that are new to students, where they may need to push themselves out of their comfort zones to hypothesize, predict, and reflect. Students will be practicing refining their skills of patience and persistence.  Indigenous Resources:   * <http://www.fnesc.ca/wp/wp-content/uploads/2015/08/PUBLICATION-61496-Science-First-Peoples-2016-Full-F-WEB.pdf> |

CORE COMPETENCIES

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| Communication | Thinking | Personal & Social |
| Connecting to **Seklép (coyote)** who represents our active communicator. Students will listen actively and be encouraged to share ideas with peers.   * Communicating   ***Connecting and engaging with others***  *Students engage in informal and structured conversations in which they listen, contribute, develop understanding and relationships, and learn to consider diverse perspectives.*  ***Focusing on intent and purpose***  *They understand that communication can influence, entertain, teach, inspire, and help us make sense of the world and our experiences.*  ***Acquiring and presenting information***  *Students communicate by receiving and presenting information.*  *They inquire into topics of interest and topics related to their studies.*   * Collaborating   ***Working collectively***  *Students combine their efforts with those of others to effectively accomplish learning and tasks.*  *As members of a group, they appreciate interdependence and cooperation, commit to needed roles and responsibilities, and are conscientious about contributing.*  ***Supporting group interactions***  *Students engage with others in ways that build and sustain trusting relationships and contribute to collective approaches.* | Connecting to **sqlélten (salmon)** who represents creativity, adaptability, persistence, and resilience. Students will aim to incorporate creativity in what they do. They will be faced with difficult tasks and persevere to accomplish them.   * Creative thinking   ***Creating and innovating***  ***Generating and incubating***  *The capacity for creative thinking expands as individuals increase their range of ideas and concepts to recombine them into new ideas.*  ***Evaluating and developing***   * Critical and reflective thinking   ***Analyzing and critiquing***  *They reflect to consider purpose and perspectives, pinpoint evidence, use explicit or implicit criteria, make defensible judgments or assessments, and draw conclusions.*  *Students have opportunities for analysis and critique through engagement in formal tasks, informal tasks, and ongoing activities.*  ***Questioning and investigating***  *They develop and refine questions; create and carry out plans; gather, interpret, and synthesize information and evidence; and reflect to draw reasoned conclusions.*  ***Designing and developing***  ***Reflecting and assessing***  *They reflect on and assess their experiences, thinking, learning processes, work, and progress in relation to their purposes.* | Connecting to **kenkéknem (bear)** who represents courage and self-awareness, and **speqmíc (swan)** who represents collaboration and respectfulness. Students will aim to be strong and courageous learners and put effort into effectively working as a team.   * Personal awareness and responsibility   ***Self-advocating***  *They are able to express their needs and seek help when needed, find purpose and motivation, act on decisions, and advocate for themselves.*  ***Self-regulating***  *They can persevere in difficult situations, and to understand how their actions affect themselves and others.*  ***Well-being***   * Positive personal and cultural identity * Social awareness and responsibility   ***Building relationships***  *They are aware and respectful of others’ needs and feelings and share their own in appropriate ways.*  ***Contributing to community and caring for the environment***  ***Resolving problems***  *They show empathy, disagree respectfully, and create space for others to use their voices.*  ***Valuing diversity***  *They are inclusive in their language and behaviour and recognize that everyone has something to contribute.* |

BIG IDEAS

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| Subject Name: Science | Subject Name: Arts Education | Subject Name: Social Studies |
| • Solutions are homogeneous  • Everyday materials are often mixtures | • Artists experiment in a variety of ways to discover new possibilities and perspectives. | Natural resources continue to shape the economy and identity of different regions of Canada. |

LEARNING STANDARDS & ASSESSMENT

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| Curricular Competencies | Content | Assessment |
| **Science**  **Grade 5 & 6**  • **CC1:** Demonstrate a sustained curiosity about a scientific topic or problem of personal interest  • **CC2:** Make observations in familiar or unfamiliar contexts  • **CC4:** Make predictions about the findings of their inquiry.  • **CC5:** With support, plan appropriate investigations to answer their questions or solve problems they have identified  • **CC6:**  Decide which variable should be changed and measured for a fair test  • **CC7:** Choose appropriate data to collect to answer their questions  • **CC11:** Identify First Peoples perspectives and knowledge as sources of information  • **CC14:** Compare data with predictions and develop explanations for results  • **CC23:**  Co-operatively design projects  • **CC 26:** Communicate ideas, explanations, and processes in a variety of ways  • **CC27:**  Express and reflect on personal, shared, or others’ experiences of place  ***Arts Education***  **Grade 5 & 6**  • **CC2:**  Create artistic works collaboratively and as an individual using ideas inspired by imagination, inquiry, experimentation, and purposeful play  • **CC7:** Reflect on creative processes as an individual and as a group, and make connections to other experiences  • **CC8:** Connect knowledge and skills from other areas of learning in planning, creating, interpreting, and analyzing works for art  • **CC10:** Adapt learned skills, understandings, and processes for use in new contexts and for different purposes and audiences | **Science**  **Grade 5**  • **C2:** Solutions and solubility  • **C8:** First Peoples concepts of interconnectedness in the environment  **Grade 6**  • **C2:** Heterogeneous mixtures  • **C3:** Mixtures:  -Separated using a difference in component properties  -Local First Peoples knowledge of separation and extraction methods  ***Arts Education***   * **C2:** Processes, materials, technologies, tools and techniques to support arts activities   ***Social Studies***   * **C8:** First Peoples land ownership and use | ***Formative***  *Lesson 1-9: Observation and reviewing learning log entries and doing a check in with students who may be struggling with concepts.*  *Exit tickets to help create our class song*  ***Summative***  *A learning log with entries after each lesson will be collected at the end of the unit.*  *A final Unit test incorporating the knowledge from all lessons.* |

Prerequisite Concepts and Skills

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| Students should have a basic knowledge of journal writing, visual representation of learning or verbal communication of learning. Basic understanding of states of matter (solid, liquid, gas). |

Teacher Preparation Required

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| Lesson 1 | Learning logs, cups, lemon juice, sugar, salt, spoon, mixing stick. |
| Lesson 2 | Learning logs, jars, food colouring, wooden skewers, water, sugar, plates, induction plate, pot, jug |
| Lesson 3 | Learning logs, bottles, water, cooking oil, food colouring, alkaseltzer tablets |
| Lesson 4 | Learning logs, Kool Aid packets, salt, oatmeal, dirt, clear cups |
| Lesson 5 | Learning logs, cups, guar gum, tablespoon, plates |
| Lesson 6 | Learning logs, glue, water colour paint, salt |
| Lesson 7 | Learning logs, salt, water, cups, object to float |
| Lesson 8 | Learning logs, white/beige cotton fabric, organic material (onion skins, beetroot), water, elastic bands |
| Lesson 9 | Learning logs, loose leaf tea, tea bags, water, cups, kettle, paintbrushes, paper, local Kamloops pictures |
| Lesson 10 | Unit test |

Cross-Curricular Connections

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| Connects with visual arts, language arts, social studies. |

Universal Design for Learning (UDL)

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| 1. MULTIPLE MEANS OF REPRESENTATION – I provide for multiple means of representation in this unit in the following ways: I am using music throughout this unit to connect students with material by creating a class song. I am pre teaching vocabulary before experimentation and having them connect to material through the creation of music and mnemonic devices and using physical experiments for kinesthetic learners. Experiments contain multiple colours, taste tests, and arts applications. 2. MULTIPLE MEANS OF ACTION AND EXPRESSION – I provide multiple means of action and expression in this unit in the following ways: All lessons use a variety of manipulatives within experiments and offer journal entry engagements in either illustration or written means. Multimedia engagement through music and visual arts as part of the arts integration. 3. MULTIPLE MEANS OF ENGAGEMENT – I provide multiple means of engagement in this unit in the following ways: Students are encouraged to make predictions and note observations in their learning logs (either through illustrations or written language) and record their findings throughout the experiments. Students are asked to reflect on their predictions and experiments within the reflection side of their learning logs. Lesson activities contain authentic and purposeful scenarios with real world connections (mixing drinks, making candy, dying clothing, making painting, music etc). Incorporation of Indigenous knowledge for students to connect to culturally relevant material. |

Differentiated Instruction (DI)

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| Visual → Lots of experimentation with visual results.  Auditory → Making a song out of the lessons as a mnemonic device.  Reading/Writing → Recording learning, questions etc. in learning logs  Kinesthetic → Hands on experimentation individually or in small groups |

Overview of Lessons:

Lesson 1

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| Lesson Name & Time (Minutes Allotted): | What is a solution? 40-45 mins |
| Learning Standards: Curricular Competencies | * CC1, CC4, CC6, CC14 |
| Learning Standards: Content | * Grade 5 & 6 C2 |
| Instructional Objectives (SWBAT…): | **SWBAT:** Describe what a solution is and make connections with solutions within their everyday lives.  **SWBAT:** Use the scientific method to engage in experiments |
| Assessment: | **What:** Learning Logs, Exit Ticket  **How:** Formative. By documenting and reporting observations and predictions within their learning logs to determine level of engagement. Exit tickets to determine they understand key vocabulary. |
| Teaching Strategies: | Guiding students through the step-by-step process of creating a glass of lemonade. Leading a class discussion on what solutions are and taking examples of other solutions they can name. |
| Materials: | Cups, water, lemon juice, spoon, sugar, salt, mixing stick. |
| LESSON ACTIVITIES | |
| Introduction/Hook: | I will introduce to the students that today we are going to be making the perfect glass of lemonade. They have three cups, some lemon juice, sugar, salt and water and they are going to spend some time mixing ingredients together until we find what tastes the best. I will then write the question “what do you think is the perfect mixture?” and have them write their predictions down in their learning log, going over the scientific method of questioning, hypothesis, testing hypothesis, analysis of data and sharing results. |
| Body: | Students will then begin experimenting with their mixtures. They will be able to make 3 different mixtures to test their hypothesis. After about 10-15 minutes of experimentation. I’ll ask students to tell me about their observations, and what ratio made the perfect glass (how many spoonfuls of sugar/lemon juice/salt). Afterward, I’ll explain to students that the mixture they created is called a solution and elaborate on that meaning. Students will spend some time writing down some of their thoughts about the experiment, observations, or impressions. |
| Closure: | After their journal entries, I will introduce them to the chorus of a song I wrote about solutions and solubility. Students will then write down on an exit ticket what the definition of a solution is, which we will incorporate into the lyrics of our class solution song. |

Lesson 2

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| Lesson Name & Time (Minutes Allotted): | Rock Candy Crystallization (solubility & crystallization) - 40 minutes |
| Learning Standards: Curricular Competencies | * CC2, CC4, CC5, CC14 |
| Learning Standards: Content | * **Grade 5**: C2 * **Grade 6:** C3 * **AE:** C2 |
| Instructional Objectives (SWBAT…): | **SWBAT:** Recognize how to safely dissolve and mix solution  **SWBAT**: Appraise the results of an on-going experiment  **SWBAT:**  Hypothesize and make predictions about what will happen |
| Assessment: | **What:** Learning Logs, Exit Ticket  **How:** Formative. By documenting and reporting observations and predictions within their learning logs to determine level of engagement. Exit tickets to determine they understand key vocabulary. |
| Teaching Strategies: | Teacher will conduct the experiment in front of the class |
| Materials: | Learning logs, jars, flavouring, wooden skewers, water, sugar, induction plate, cloths pins, saran wrap. |
| LESSON ACTIVITIES | |
| Introduction/Hook: | I will begin by writing the word “Crystallization” on the board and have them turn to their neighbor and talk about what they know about it if anything. After a few minutes, I’ll have them share any thoughts they might have about what Crystallization is. I will then play them this short video, <https://youtu.be/nztV4w0DtOo>.  After the video is complete, I will explain to students that today we’re going to turn sugar into pure crystals. Using the same scientific method as previous lessons, students will write the question “how long will it take for sugar to crystalize?” and log their hypothesis. |
| Body: | Once students are done writing in their learning log, I will start to pour the sugar into the pot of boiling water, generating discussions on the solubility of sugar in boiling water, how much sugar we need to make the solution super saturated, and what the solution will look like once it is super saturated.  Solution will be poured into jars and dried sugar sticks will be placed in the solution and left to sit for up to one week, where students will record their observations every few days.  Students will journal about the solubility of the solution, their observations and hypothesis of what will happen over time as the sticks are left in the solution |
| Closure: | Students will review the “solutions song” and work together to add a new line to the song |

Lesson 3

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| Lesson Name & Time (Minutes Allotted): | Heterogeneous and Emulsion Solutions 40-45 mins |
| Learning Standards: Curricular Competencies | * CC14, CC23, CC26 * AE: CC8, CC10 |
| Learning Standards: Content | * **Grade 5:** C2 * **Grade 6:** C2, C3 * **AE:** C2 |
| Instructional Objectives (SWBAT…): | **SWBAT:** Explain the difference between a homogenous and heterogeneous solution.  **SWBAT:** Recognize different solutions as either homogeneous or heterogeneous by their appearance.  **SWBAT:** Illustrate what makes lava lamps an example of Emulsions. |
| Assessment: | **What:** Learning Logs, Exit Ticket  **How:** Formative. By documenting and reporting observations and predictions within their learning logs to determine level of engagement. Exit tickets to determine they understand key vocabulary |
| Teaching Strategies: | Instruction on definitions, guided instruction on lava lamp creation. |
| Materials: | Learning logs, bottles, cooking oil, water, food colouring, alkaseltzer tabs. |
| LESSON ACTIVITIES | |
| Introduction/Hook: | Go over the song lyric from the previous lesson about solubility and crystallization. The class will participate in singing the created lyrics and chorus of the song created to this point.  Learning logs are passed out for the next experiment. |
| Body: | I will explain what a homogenous solution is and what a heterogeneous solution is. I will explain to students that they are going to make a heterogeneous solution using two homogenous solutions. I will have them write down the question “What happens when we add the water to the oil?” I will then have them document what their hypothesis is in their learning log.  After materials are passed out, I will demonstrate how to make their lava lamps.  I will walk around and assist students as they create their colourful lava lamps. |
| Closure: | Once students are finished, I will have them watch a short video on Emulsions, and then have them write down any observations or interests they had in their learning logs reflection section. I will ask students to share any thoughts they had or things they found interesting. I will then ask them to create their exit ticket defining Emulsions in heterogeneous solutions for song lyric creation.  https://www.youtube.com/watch?v=bC\_czAL24zY |

**Lesson 4**

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| Lesson Name & Time (Minutes Allotted): | Solvents, Solutes and Suspensions - 40-45mins |
| Learning Standards: Curricular Competencies | * CC2, CC4, CC5, CC14 |
| Learning Standards: Content | * **Grade 5:** C2 * **Grade 6:** C2, C3 * **AE:** C2 |
| Instructional Objectives (SWBAT…): | **SWBAT**: Define what the difference is between a solvent and a solute.  **SWBAT**: Identify the solvents and solutes we’ve used in previous lessons  **SWBAT**: Recognize what makes a suspension in a solution. |
| Assessment: | **What:** Learning Logs, Exit Ticket  **How:** Formative. By documenting and reporting observations and predictions within their learning logs to determine level of engagement. Exit tickets to determine they understand key vocabulary |
| Teaching Strategies: | Instruction on what makes something a solute and what makes it a solvent. Walkthrough the experiment. |
| Materials: | Cups, water, Kool-Aid, salt, oatmeal, dirt |
| LESSON ACTIVITIES | |
| Introduction/Hook: | Have the class come together and go over the lyric we created from the previous lesson on homogeneous/heterogeneous solutions. Students will participate in the singing of the solution song with the newly added lyrics.  Learning logs will be passed out. |
| Body: | I will pull up my google slide with the words solvent and solute written down, with their definitions and begin a conversation in our previous lessons about some of the solvents and solutes we’ve seen already. I’ll pull up my next slide which will have the word “Suspension” written on it and its definition. I’ll show students the substances we are going to add to the water and have them write the question “Which one of these substances is going to be a solute in the water solvent? Which ones are going to be a Suspension in the solution?” and have them make their hypothesis in their learning logs.  Students will begin their experiments while I walk around and observe, helping when necessary. |
| Closure: | Once students have finished their experiments, their analysis and if their predictions were correct. I’ll then have them define what a solvent/solute is in an exit ticket for the creation of the next lyric of our solutions song. |

Lesson 5

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| Lesson Name & Time (Minutes Allotted): | Colloids (Slime)- 40-45mins |
| Learning Standards: Curricular Competencies | * CC2, CC4, CC5, CC14, CC26 |
| Learning Standards: Content | * **Grade 6:** C2 * **AE:** **C2** |
| Instructional Objectives (SWBAT…): | SWBAT: Define what the characteristics of colloids.  SWBAT: Identify the colloids in everyday items.  SWBAT: Recognize the difference between Suspensions and Colloids (particle size). |
| Assessment: | **What:** Learning Logs, Exit Ticket  **How:** Formative. By documenting and reporting observations and predictions within their learning logs to determine level of engagement. Exit tickets to determine they understand key vocabulary |
| Teaching Strategies: | Review previous vocabulary, Instruction on Colloids and how they differ from Suspensions. Walkthrough the experiment. |
| Materials: | Cups, guar gum, tablespoon, plates, water, kettle. |
| LESSON ACTIVITIES | |
| Introduction/Hook: | Have the class come together and go over the lyric we created from the previous lesson on solvents, solutes, and suspensions. Students will participate in the singing of the solution song with the newly added lyrics.  Learning Logs will be passed out. |
| Body: | I will begin our lesson by talking about the suspension experiment we conducted during the last class. I will ask the students how they knew which materials were suspensions, and what it looked like. Once students have discussed that you can see the materials floating (or in suspension) in the solvent, I will then explain that those materials are called particles. In suspensions, particle sizes are larger than 1000 nanometers, making them visible to the human eye. But if particles were smaller than that, and never settled but stayed suspended in the solvent, would that still make it a suspension?  I will then explain that these materials are called Colloids. I will then go over out next experiment, where we are going to mix together a powdered substance called guar gum into a cup of warm water. In their learning logs, they will write down the question “After mixing together water and guar gum, will I end up with a Suspension, or a Colloid?”  Students will write down their hypothesis, any background knowledge they might have about this experiment, testing hypothesis and results. Students will begin their experiments. |
| Closure: | Once students have finished their experiments, their analysis and if their predictions were correct. I’ll then have them write how they could tell their substance was a colloid (based on particle size) and if they could think of any other everyday substances that might be colloids. Once they are finished, students will write down a defining feature of a colloid as an exit ticket for the creation of the next lyric of our solutions song. |

Lesson 6

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| Lesson Name & Time (Minutes Allotted): | Insoluble Substances 40 mins |
| Learning Standards: Curricular Competencies | * CC1, CC2, CC7, CC14 * AE: CC2, CC7 |
| Learning Standards: Content | * **Grade 5:** C2 * **Grade 6:** C2 * **AE:** C2 |
| Instructional Objectives (SWBAT…): | **SWBAT:** Recognize that water is a solvent  **SWBAT:** Recognize that salt is a solute  **SWBAT:** Recognize that salt normally dissolves in water  **SWBAT:** Interpret why the water solution does not dissolve the salt |
| Assessment: | **What:** Learning Logs, Exit Ticket  **How:** Formative. By documenting and reporting observations and predictions within their learning logs to determine level of engagement. Exit tickets to determine they understand key vocabulary |
| Teaching Strategies: | Review previous vocabulary, demonstrate activity to students, circulate and ask questions to generate deeper thinking/understanding |
| Materials: | Glue, paper, water colours, salt. |
| LESSON ACTIVITIES | |
| Introduction/Hook: | I will have the students come together and go over the song lyrics we created for colloids. I will then review what is a solvent, a solute, and solubility while passing out their learning logs. |
| Body: | I will then write down the word insolubility and ask students if they can guess what it means. After students have taken some time to guess, I will explain that, and insoluble substance is something that cannot dissolve in a solvent. I will explain that today’s experiment will be experimenting with insolubility by painting a picture. Students will write the question “Will salt dissolve in glue?”. Students will write down their hypothesis, any background knowledge they might have about this experiment, testing hypothesis and results. Students will begin their experiments by taking a piece of paper and create a pattern with the white glue, they will then cover it in salt. Once the salt is set in the glue, they will shake off excess. Students will then use droppers or paintbrushes to go over salt with food colouring water/watercolour paint. |
| Closure: | Students will spend some time writing in their reflection section about why the salt didn’t dissolve when the water mixture is added on top. Once students are done, they will write their definition of insoluble on an exit ticket for the creation of their song lyric. |

Lesson 7

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| Lesson Name & Time (Minutes Allotted): | Saturated Solutions 40-45 mins (saltwater buoyancy) |
| Learning Standards: Curricular Competencies | * CC1, CC2, CC4, CC5, CC6, CC14, CC26 |
| Learning Standards: Content | * **Grade 5:** C2 * **Grade 6:** C3 * **AE:** C2 |
| Instructional Objectives (SWBAT…): | **SWBAT:** Define solute, solvent  **SWBAT**: Describe how salt dissolves into water  **SWBAT**: Analyze why the egg is or isn’t floating |
| Assessment: | **What:** Learning Logs, Exit Ticket  **How:** Formative. By documenting and reporting observations and predictions within their learning logs to determine level of engagement. Exit tickets to determine they understand key vocabulary |
| Teaching Strategies: | Review vocabulary, circulate asking questions to encourage deeper thinking/understanding |
| Materials: | salt, water, cups, egg |
| LESSON ACTIVITIES | |
| Introduction/Hook: | I will have the students come together and go over the song lyrics we created for insolubility. We will sing what we have created together so far before moving on to our next lesson.  While I hand out their learning logs, I will start a discussion about yesterday’s lesson on insolubility, and how today we are going to talk more about the difference between insolubility and saturation. |
| Body: | I will then write the word Saturation on the board, and talk to students about what a saturated solution is. I will then ask students if they can recall in our other experiments, if we have seen a super saturated solution before. Today’s experiment will be to analyze what how to make an egg float in water by changing the density of the solution when we saturate it. Students will write down the question “What do I need to do to the solvent (water) to make the egg float?” Students will write down their hypothesis, any background knowledge they might have about this experiment, testing hypothesis and results.  Students will work in small groups with water, salt, egg to make perfect mixture to float the egg |
| Closure: | Students will then reflect and discuss why dissolving more salt into the solution allows for the egg to float. Students will write the definition of a saturated solution for their exit ticket. |

Lesson 8

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| Lesson Name & Time (Minutes Allotted): | Indigenous Plant/Organics Dye |
| Learning Standards: Curricular Competencies | * CC1, CC11, CC26, CC27 * AE: CC2, CC10 |
| Learning Standards: Content | * **Grade 5:** C2, C8 * **Grade 6:** C3 * **AE:** C2 |
| Instructional Objectives (SWBAT…): | **SWBAT:** Connect which plants/foods could be used for dyeing and why.  **SWBAT:** Connection to Indigenous knowledge |
| Assessment: | **What:** Learning Logs  **How:** Formative. By documenting and reporting observations and predictions within their learning logs to determine level of engagement. |
| Teaching Strategies: | Encourage students to connect thinking to FPPL, circulate asking questions to encourage deeper thinking/understanding, storytelling |
| Materials: | white/beige cotton fabric, organic material (onion skins, avocado skins, beetroot peeling), previously made dye in jugs, elastic bands |
| LESSON ACTIVITIES | |
| Introduction/Hook: | I will have students clear their desks and close their eyes envisioning they are out in the wilderness, with everything around them, brainstorm what is around them i.e. plants, trees, berries, grass, moss, algae, dirt  I will have students think about how they could use these items to create colours/dyes |
| Body: | I will bring out a bag of onion skins, avocado skins, beetroot peelings and pass out a few to table groups to touch, scratch against the paper on their learning logs to see what colors they see.  Students can use their learning logs to make predictions about what colour each of these organics would produce  I will then bring out jugs of “dye” for each organic item that I made and pass out small amounts to each table group.  Students can then compare their predictions to colour of the dye in their learning logs and can tie dye a small square of cotton fabric with dye of choice |
| Closure: | I will pose the question for learning log “Is making dye a solution?”  Students can also reflect on connection between First Peoples techniques and what they have been learning through the unit. After they have finished, we will go over the solutions song. |

Lesson 9

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| Lesson Name & Time (Minutes Allotted): | Tea Brewing - 45 minutes |
| Learning Standards: Curricular Competencies | * CC1, CC6, * CC11, CC26, CC27 * AE: CC7, CC8, CC10 |
| Learning Standards: Content | * **Grade 5:** C2, C8 * **Grade 6:** C3 * **AE:** C2 |
| Instructional Objectives (SWBAT…): | **SWBAT:** Relate Indigenous knowledge to the western science practices  **SWBAT:** Develop their own tea and make hypotheses about why the tea brewed differently depending on temperature of the water  **SWBAT:** Connect the importance of tea in Indigenous culture and create a piece of art using the tea |
| Assessment: | **What:** Learning Logs  **How:** Formative. By documenting and reporting observations and predictions within their learning logs to determine level of engagement. |
| Teaching Strategies: | Encourage students to connect thinking to FPPL, circulate asking questions to encourage deeper thinking/understanding |
| Materials: | Loose leaf tea, tea bags, water, cups, kettle, paintbrushes, paper, Secwepemc tea painting examples, local Kamloops pictures |
| LESSON ACTIVITIES | |
| Introduction/Hook: | <https://www.native-art-in-canada.com/ojibwatea.html>  I will begin by doing a small reading on Ojibwa tea, projects and Ojibwa painting of a man drinking tea |
| Body: | I will then start to talk to students about how Indigenous people have been using methods of extraction to collect medicines and dyes from plants, or oils from eulachon fish for thousands of years. Extraction methods could be crushing plants into a paste, boiling, or steaming leaves, roots or blossoms to make teas or tinctures, or skimming the oil off the surface of the water as the fish are boiled. For today’s experiment, students are going to extract their own dyes using loose leaf tea/tea bags and cold water. Students will write the question “Will I get a deeper colour using warm water or cold water” Students will write down their hypothesis, any background knowledge they might have about this experiment, testing hypothesis and results.  Students will then “steep” tea and record what happens. They will be given warm/hot water and will be given some time to record findings/observations in their journals  Students can then use the tea mixtures to paint a picture. I will display a scenery photo of Kamloops for inspiration; however students are welcome to paint whatever they would like. |
| Closure: | Students will spend some time reflecting in their journal about the importance of tea in relation to culture. We will then go over our solutions song one last time before the Unit test during the next class |
| Extension: | <https://moa.ubc.ca/2020/07/knowledge-keepers-a-moa-original-video-series/>  T shows ss a video about Indigenous connections to plants  T has ss reflect and think about how these plants were used/how did they ingest the medicinal properties? |

**Lesson 10**

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| Lesson Name & Time (Minutes Allotted): | Unit Test – 30 Minutes |
| Learning Standards: Curricular Competencies | * C7, CC26 |
| Learning Standards: Content | * **Grade 5:** C2, C8 * **Grade 6:** C2, C3 |
| Instructional Objectives (SWBAT…): | **SWBAT** Connect what they’ve learned during this Unit to answer questions  **SWBAT** Draw on the mnemonic device (song) to help trigger learning |
| Assessment: | **What:** Unit Test  **How:** Unit test will be the summative assessment of students learning throughout the unit. |
| Teaching Strategies: | Observation |
| Materials: | Unit Test, pen |
| LESSON ACTIVITIES | |
| Introduction/Hook: | I will ask students to please clear their desks as we prepare for our Unit test. I’ll explain that they will have 30 minutes to complete the test, if they have finished early they can read silently, draw, write, colour or participate in any other silent activity until students are finished their tests. |
| Body: | Students will have 30 minutes to complete their Unit test. |
| Closure: | Students will hand in their tests |

Resources

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| <https://moa.ubc.ca/2020/07/knowledge-keepers-a-moa-original-video-series/>  <https://www.native-art-in-canada.com/ojibwatea.html>  https://www.cbc.ca/news/canada/saskatoon/indigenous-medicinal-walk-1.4235900 |

Extensions to Unit

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| Unit could segue into a unit about the oceans or dive further into chemistry and chemical compounds. Could be combined with home economics like cooking or baking. |

Reflections

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