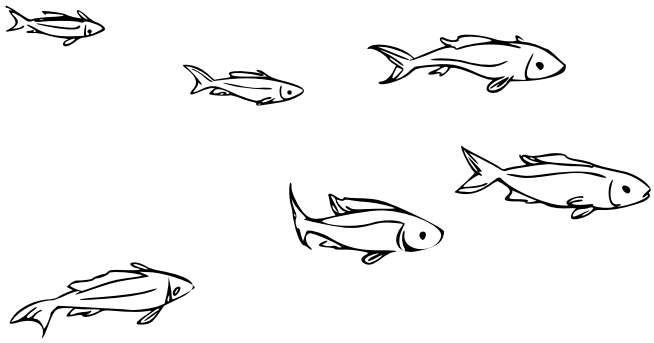


ADST + Art Lesson

STUDENTS WILL LEARN ABOUT OOLICHAN AS A KEYSTONE NW COAST SPECIES. THEY WILL CREATE AN ARTISTIC REPRESENTATION OF A SMOKEHOUSE AND LEARN ABOUT THE TECHNOLOGY INVOLVED IN SMOKING OOLICHANS.

These lessons were built in connection to a larger cross curricular unit on Oolichan fishing which includes Math, Science and English.

CORE COMPETENCIES

Students will demonstrate communication and collaboration through group learning and co-teaching as well as peer feedback. They will think creatively, critically, and reflectively via the artistic and persuasive components of the unit. Learners will develop personal, cultural, and social awareness and responsibility in considering oolichan not just environmentally, but also culturally, nutritionally, and historically.

FIRST PEOPLES PRINCIPLES

Learning will support personal and community wellbeing, and engage in a holistic, reflexive, and reflective approach throughout the unit - students will consider the history and role of oolichans, the impacts of climate disaster on oolichan and broader cultural practices and health impact, and the immense Indigenous knowledge surrounding the math and technology of oolichan. They will consider their identities in creating the art piece which will reflect their own background and connect to place.

ADST Curricular Connections

Big Idea

Design can be responsive to identified needs.

Competencies:

- Uncover needs and potential design opportunities
- Identify key features or potential users and their requirements
- Generate potential ideas and add to others' ideas
- Construct a first version of the product or a prototype, as appropriate, making changes to tools, materials, and procedures as needed
- Identify how the land, natural resources, and
- culture influence the development and use of tools and technologies

Content:

- Drafting: technical drawing, including sketching techniques and manual drafting techniques elements of plans and drawings
- Woodwork: ways in which wood is used in local cultural and economic contexts
- Characteristics of wood as a material
- Woodworking techniques and basic joinery using hand tools

Art Curricular Connections

Big Idea

Engaging in creative expression and experiences expands people's sense of identity and community. & Artistic expressions differ across time and place.

Competencies:

- Intentionally select, apply, combine, and arrange artistic elements, processes, materials, movements, technologies, tools, techniques, and environments in art making
- Explore relationships between identity, place, culture, society, and belonging through the arts
- Demonstrate an understanding and appreciation of personal, social, cultural, historical, and environmental contexts in relation to the arts
- Interpret creative works using knowledge and skills from various areas of learning
- Examine relationships between the arts and the wider world
- Demonstrate increasingly sophisticated application and/or engagement of curricular content

Content:

- Visual arts: elements of design: line, shape, space, texture, colour, form (visual arts), value; principles of design: pattern, repetition, balance, contrast, emphasis, rhythm (visual arts), variety, unity, harmony
- Processes, materials, movements, technologies, tools, strategies, and techniques to support creative works
- Traditional and contemporary Aboriginal arts and arts-making processes
- A variety of national and international works of art and artistic traditions from diverse cultures, communities, times, and places
- Personal and collective responsibility associated with creating, experiencing, or presenting in a safe learning environment

Learning about Oolichan Smokehouses Lesson

Following learning about Oolichan, students will enquire how Indigenous communities of the North West coast process Oolichan by smoking it in a smokehouse. Students will watch a youtube video on the process.

Students will be placed in groups of 3-4. Students will answer questions through a group discussion

- What was the purpose of a smokehouse?
- What is the importance of a smokehouse for Indigenous communities?
- What materials were used in traditionally building smokehouses?
- What are important design considerations in designing a smokehouse?

In their groups, students will create an artistic depiction of a smokehouse with the intention of it being created. Students will identify the materials needed to create the final design.

The teacher can build an example in the class to demonstrate the mechanics of a smokehouse.

Design a Smokehouse Blueprint Worksheet

Names:

Design a smokehouse

Materials

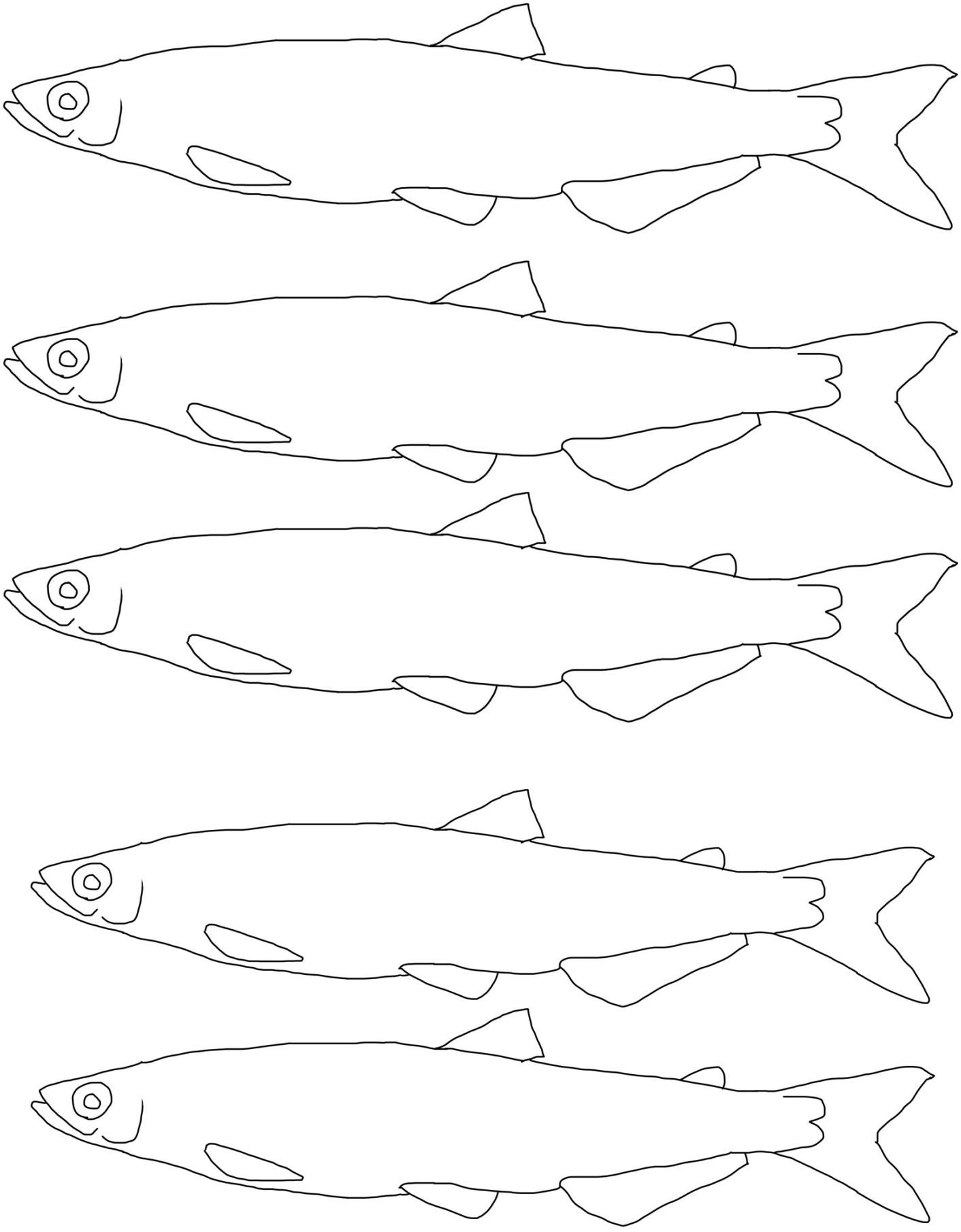
Instructions on how to build the smokehouse:

Important considerations:

Oolichan Art Lesson

Students will be given Oolichan templates to design their own rack of Oolichan fish for the classroom's depiction of a smokehouse.

Students will be encouraged to do this using a style they have previously learned in art classes - form line, an art style from their own backgrounds or using design elements they have learned such as using patterns, pointillism, watercolours. The drying rack with each student's fish will be on display for the school to see.



Knowledge

- The oily fish grows to around 20 centimetres, and is also known as candlefish, ooligan, or oolichan. They spawn in freshwater streams and rivers like the Skeena for a few weeks between April and early May each year.
- For thousands of years, Indigenous peoples along the Pacific Coast have valued oolichan as a food source, for their high oil content, and as an important ceremonial and trade item.
- Eulachon grease is made by putting the fish in what's called a stink box, where the blood drains into cedar boughs laid on the bottom. The eulachon ferment for several days until their eyes turn red before they're moved to another box for cooking at a precise temperature that releases the grease.
- Smoked Eulachons is a common method for preparing eulachons. When smoked, eulachons provide an excellent source of fat, protein, iron, and riboflavin. Eulachon and eulachon grease are also an excellent source of vitamin A and omega-3 fatty acids

Procedure

1. Wash the eulachons well under running water.
2. Place the fish in a barrel of fresh water to which has been added enough coarse salt to float a potato.
3. Soak for about ½ hour to 1 hour or until their eyes turn white.
4. Hang the eulachons for smoking by threading on cedar sticks.
Push the strip of red cedar in through the gills and out through the mouth.
Usually, 12-25 eulachon are put on each stick.
5. Hang the eulachon heavy sticks from the rafters in the smokehouse, making sure the fish are not touching each other.
There needs to be enough space between each rack and the fish so that the smoke is even.
6. Start the fire after the eulachon finish dripping. Use alder wood for smoking.
7. Smoke the eulachon for 2-6 days. Smoke longer for drier fish.
Half-smoked eulachons (i.e., left one to two days in the smokehouse) may be canned.

-

Materials

- Laptop and projection system for youtube video
- Blueprint sheets printed
- Wood, string nails for class smokehouse
- Long sticks for Oolichan racks (usually cedar)
- Clips to hang fish (explain the traditional process)
- Oolichan fish printed for art lesson

Accommodations

- Students will work in groups allowing for any students with mobility challenges in art/ design to have help doing physical tasks. The teacher will make sure small groups are done outside/ in the gym/library if the classroom is noisy when working in groups for extra space in case students are affected by loud environments.

Assessment

- Formative assessments will be made through classroom discussions after specific learning activities and group work participation.
- One single-point rubric will be used throughout the lessons summatively assessing students on their ability to work in a group, design thinking, time management and their oolichan depiction.

Rubric

Teacher can use this rubric to make notes regarding observations and where students are arriving in each category.

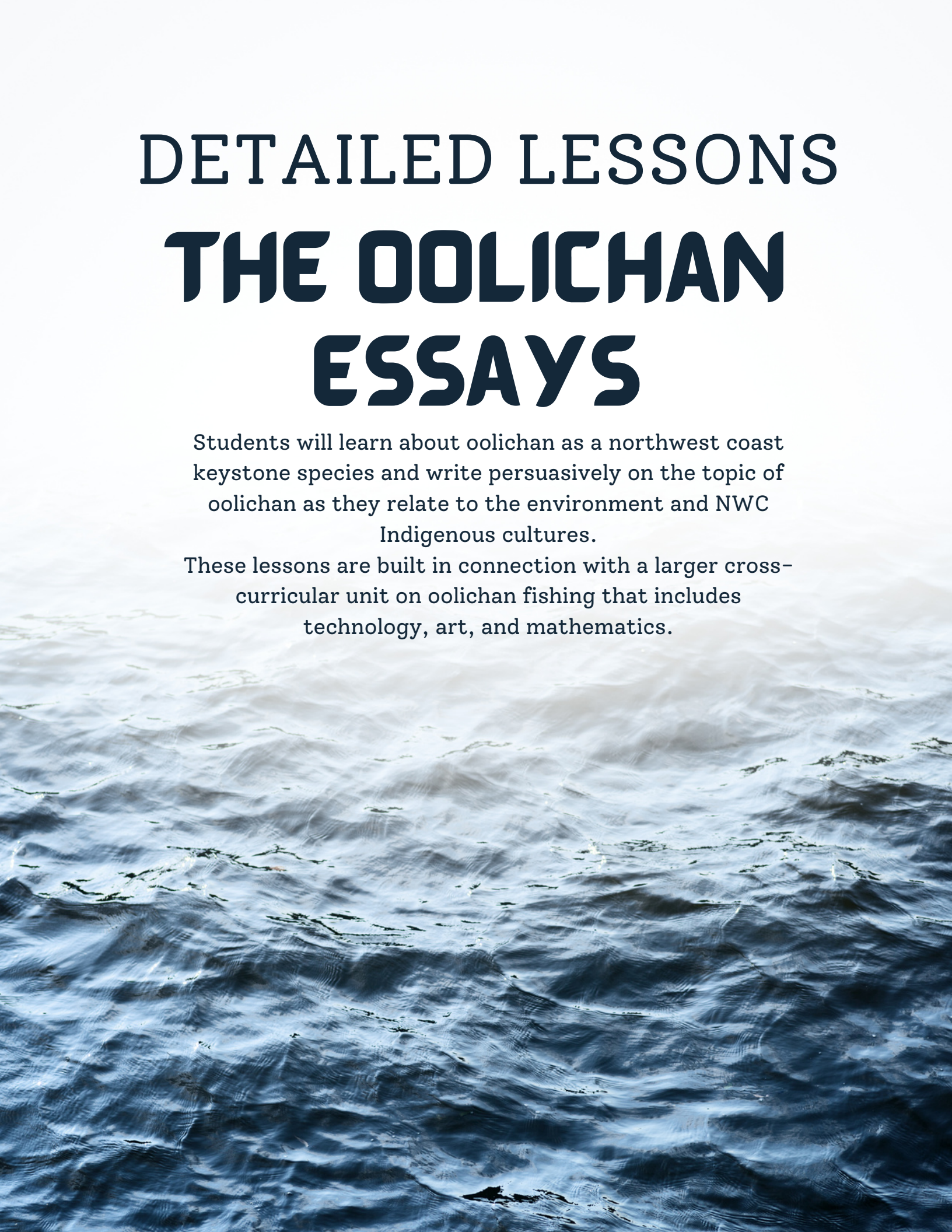
	Does not Meet Expectations	Approaching Expectations	Meets Expectations	Exceeds Expectations
Design Thinking				
Group Work				
Time Management				
Oolichan Art				

DETAILED LESSONS

THE OOLICHAN ESSAYS

Students will learn about oolichan as a northwest coast keystone species and write persuasively on the topic of oolichan as they relate to the environment and NWC Indigenous cultures.

These lessons are built in connection with a larger cross-curricular unit on oolichan fishing that includes technology, art, and mathematics.



CORE COMPETENCIES

Students will demonstrate communication and collaboration through peer feedback. They will think creatively, critically, and reflectively via persuasive writing. Learners will develop personal, cultural, and social awareness and responsibility in considering oolichan not just environmentally, but also culturally, nutritionally, and historically.

FIRST PEOPLES PRINCIPLES

Learning will support personal and community wellbeing, and engage in a holistic, reflexive, and reflective approach throughout the unit - students will consider the history and role of oolichan, the impacts of climate disaster on oolichan and broader cultural practices and health impacts of the species. This learning will reflect an understanding of relation to self and land.

INCLUSION

Adaptations and supports to be provided as needed in a given class.

In this class we have Ryan, who has limited verbal ability, a moderate intellectual disability, and is autistic. He uses picture symbols to communicate and struggles with loud noises. Ryan would be invited to participate in the vocabulary lesson, and hopefully would have the option to make use of noise reducing headphones or ear plugs to reduce the overwhelm of this activity. For his essay, Ryan would work on many outcomes offered to his peers, but could choose to present his learning using his picture symbols, or if he is working on some vocab might choose to make a poster that includes a few of the key words discussed to support his communication of learning.

INCLUSION

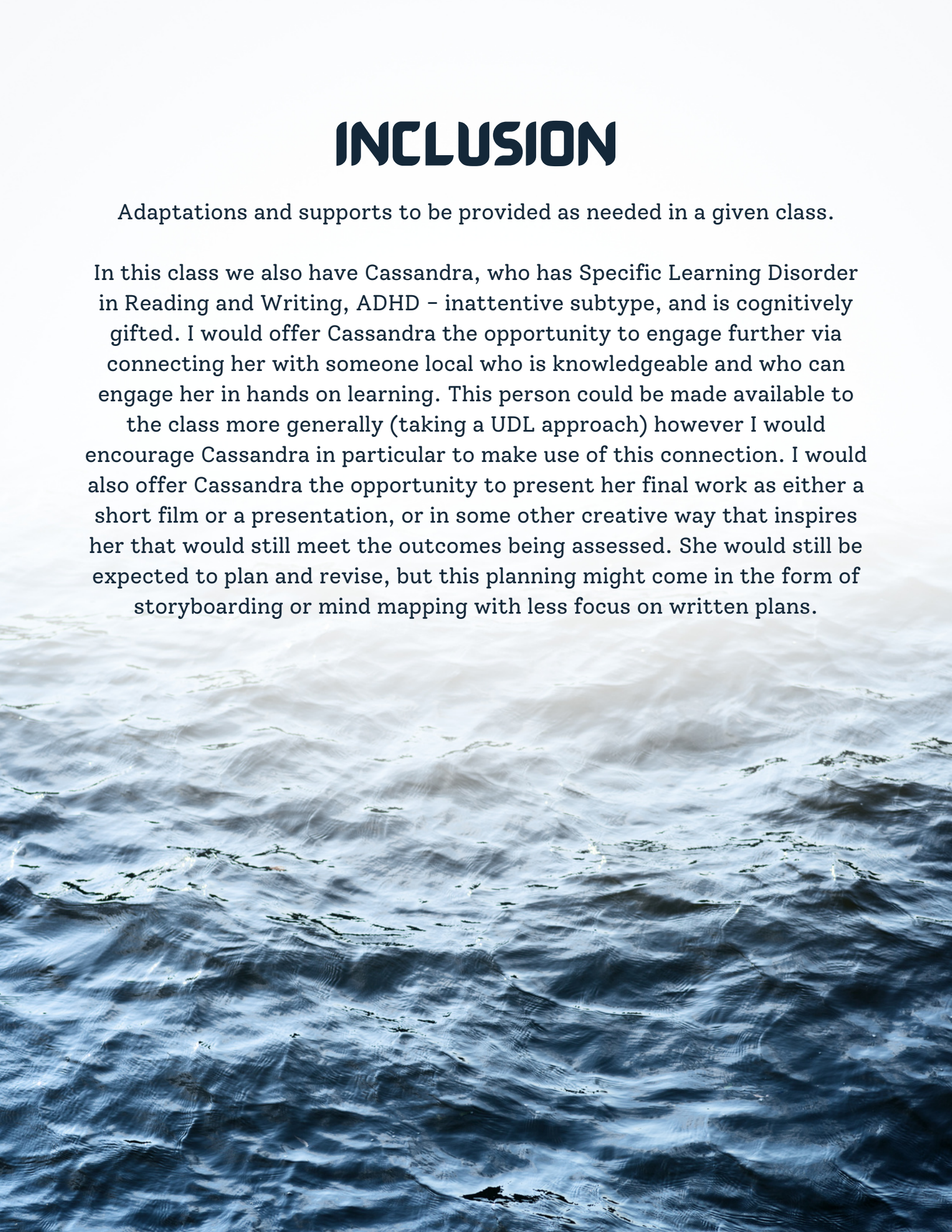
Adaptations and supports to be provided as needed in a given class.

In this class we also have Peter who has Cerebral Palsy that impacts his gross and fine motor abilities, and his vocal articulation. Peter would be invited to participate in most of the activities as is. For the activity in which students move from one end of the room to the other, I would ensure ahead of time that the room was set up to support his ability to participate without physical barriers or long distances to cross. If Peter felt his speed in typing and revising was hindered by his motor abilities, he could be provided with additional time to complete his final drafts.

INCLUSION

Adaptations and supports to be provided as needed in a given class.

In this class we also have Cassandra, who has Specific Learning Disorder in Reading and Writing, ADHD – inattentive subtype, and is cognitively gifted. I would offer Cassandra the opportunity to engage further via connecting her with someone local who is knowledgeable and who can engage her in hands on learning. This person could be made available to the class more generally (taking a UDL approach) however I would encourage Cassandra in particular to make use of this connection. I would also offer Cassandra the opportunity to present her final work as either a short film or a presentation, or in some other creative way that inspires her that would still meet the outcomes being assessed. She would still be expected to plan and revise, but this planning might come in the form of storyboarding or mind mapping with less focus on written plans.



ELA CURRICULAR CONNECTIONS

BIG IDEA

ELA: Exploring and sharing multiple perspectives extends our thinking & Questioning what we hear, read, and view contributes to our ability to be educated and engaged citizens.

COMPETENCIES

- Access information and ideas for diverse purposes and from a variety of sources and evaluate their relevance, accuracy, and reliability
- Apply appropriate strategies to comprehend written, oral, and visual texts, guide inquiry, and extend thinking
- Synthesize ideas from a variety of sources to build understanding
- Think critically, creatively, and reflectively to explore ideas within, between, and beyond texts
- Recognize and identify the role of personal, social, and cultural contexts, values, and perspectives in texts
- Recognize how language constructs personal, social, and cultural identity
- Construct meaningful personal connections between self, text, and world
- Exchange ideas and viewpoints to build shared understanding and extend thinking
- Use writing and design processes to plan, develop, and create engaging and meaningful literary and informational texts for a variety of purposes and audiences
- Assess and refine texts to improve their clarity, effectiveness, and impact according to purpose, audience, and message

CONTENT

- Techniques of persuasion
- metacognitive strategies
- writing processes
- Paragraphing
- sentence structure and grammar

SCIENCE CURRICULAR CONNECTIONS

BIG IDEA

Multicellular organisms rely on internal systems to survive, reproduce, and interact with their environment.

COMPETENCIES

- Demonstrate a sustained curiosity about a scientific topic or problem of personal interest
- Identify questions to answer or problems to solve through scientific inquiry
- Experience and interpret the local environment
- Identify First Peoples perspectives and knowledge as sources of information
- Identify some of the social, ethical, and environmental implications of the findings from their own and others' investigations
- Communicate ideas, explanations, and processes in a variety of ways
- Express and reflect on personal, shared, or others' experiences of place

CONTENT

- the basic structures and functions of body systems
- heterogeneous mixtures
- mixtures: separated using a difference in component properties
- Local First Peoples knowledge of separation and extraction methods

VOCABULARY LESSON

Go over the definitions of the following words:

Indigenous Nations: The first peoples to have built governments, cultures, and relationships to land in a particular area (territory).

Keystone Species: organisms, usually animals, that play a crucial role in different habitats and have a huge effect on the environment around them. If they went extinct their habitat would change a lot.

TEK: Traditional Ecological Knowledge is the knowledge that First Nations people have regarding sustainability, science, and technology of local resources.

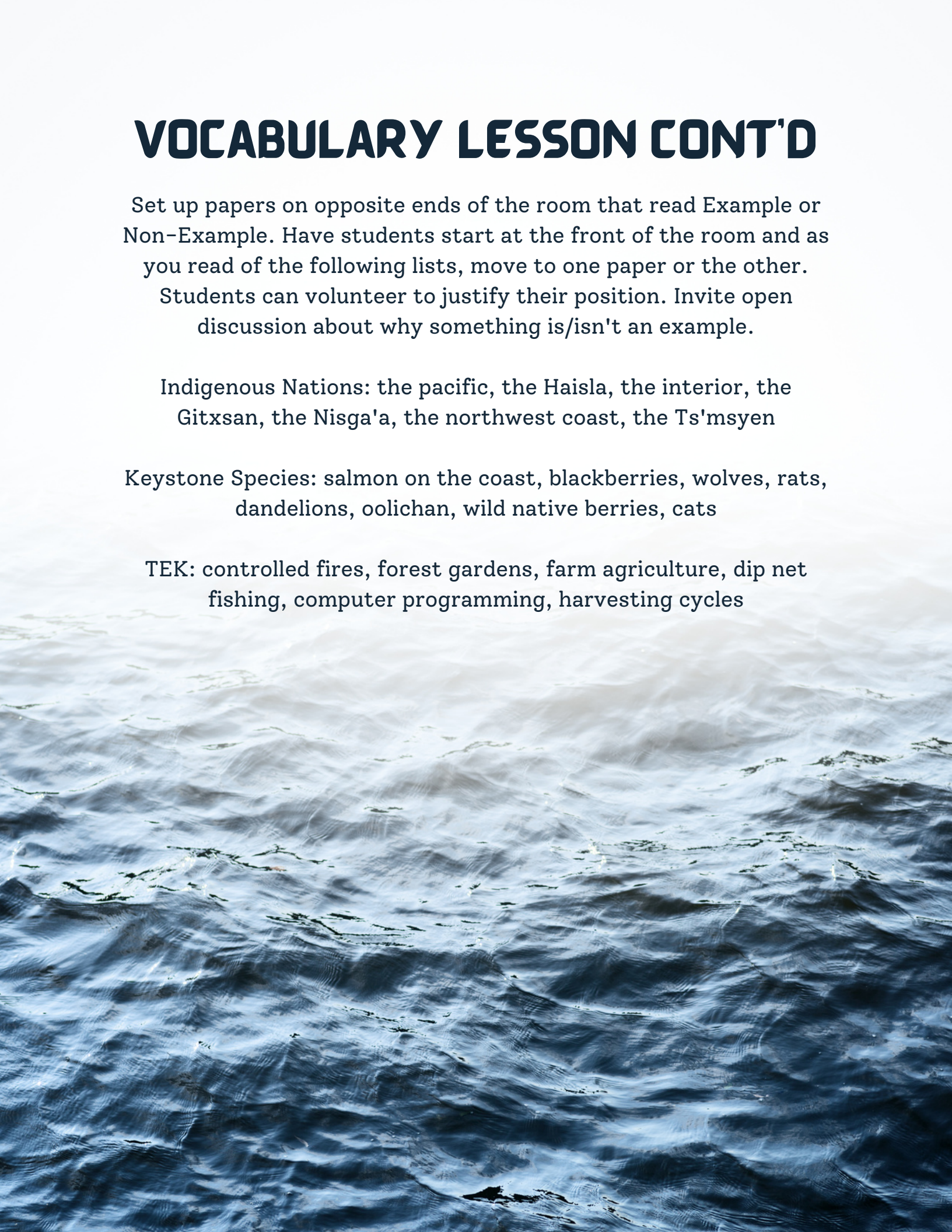
VOCABULARY LESSON CONT'D

Set up papers on opposite ends of the room that read Example or Non-Example. Have students start at the front of the room and as you read of the following lists, move to one paper or the other. Students can volunteer to justify their position. Invite open discussion about why something is/isn't an example.

Indigenous Nations: the pacific, the Haisla, the interior, the Gitxsan, the Nisga'a, the northwest coast, the Ts'msyen

Keystone Species: salmon on the coast, blackberries, wolves, rats, dandelions, oolichan, wild native berries, cats

TEK: controlled fires, forest gardens, farm agriculture, dip net fishing, computer programming, harvesting cycles



KNOWLEDGE PREP

On the following page I've included resources that can be prepped to support student knowledge of oolichan. This phase of the unit would also be a good time to invite a local knowledge keeper to speak with the students if there is someone available.

Printed resources can be prepped and placed on a table each. Video resources can be prepped on 1-2 devices depending on what is available in your classroom.

In groups of 3-4, students will rotate through each source. At each table they will add to a mind-map that explores what they have learned about oolichan, and the cultural and environmental connections that exist to oolichan in this region.

EXTERNAL RESOURCES

The following resources can be printed or viewed and used as sources for student essays. Students may need support identifying key information and integrating that information into their essays.

PRINT RESOURCES

https://kidadl.com/facts/animals/eulachon-facts

https://kids.kiddle.co/Hobiyee

https://www.fnha.ca/Documents/Traditional_Food_Fact_Sheets.pdf (p.6&7)

PRINT RESOURCES

https://www.youtube.com/watch?v=sZYRl_4v2B4

Sinumwack: Bella Coola Oolichan Run (UBCIC, 1978) - 20 mins

https://www.youtube.com/watch?v=uq6KZzQHr2Q

oolichan.org video created by HNC in 2002 for school use - 5 mins

ESSAY PLANNER

Prompt (pick one):

1. Is oolichan a keystone species? (think about culture and/or the environment)
2. Is oolichan related to TEK? (traditional ecological knowledge)
3. How does oolichan connect to the health of coastal Indigenous peoples?

Thesis statement: _____

_____

Intro Paragraph	Start with your thesis statements. One sentence summarizing the expanding paragraph: _____ _____ Give one piece of evidence: _____ _____ Connecting sentence to second paragraph: _____ _____
Expanding Paragraph	A major reason for your position: _____ An example or supporting source for that reason: _____ _____ A second major reason: _____ An example or supporting source for that reason: _____ _____
Closing Paragraph	One to two sentences summarizing your main points: _____ _____ One sentence that gives a big picture understanding of the issue: _____ _____ One sentence rephrasing your thesis statement.

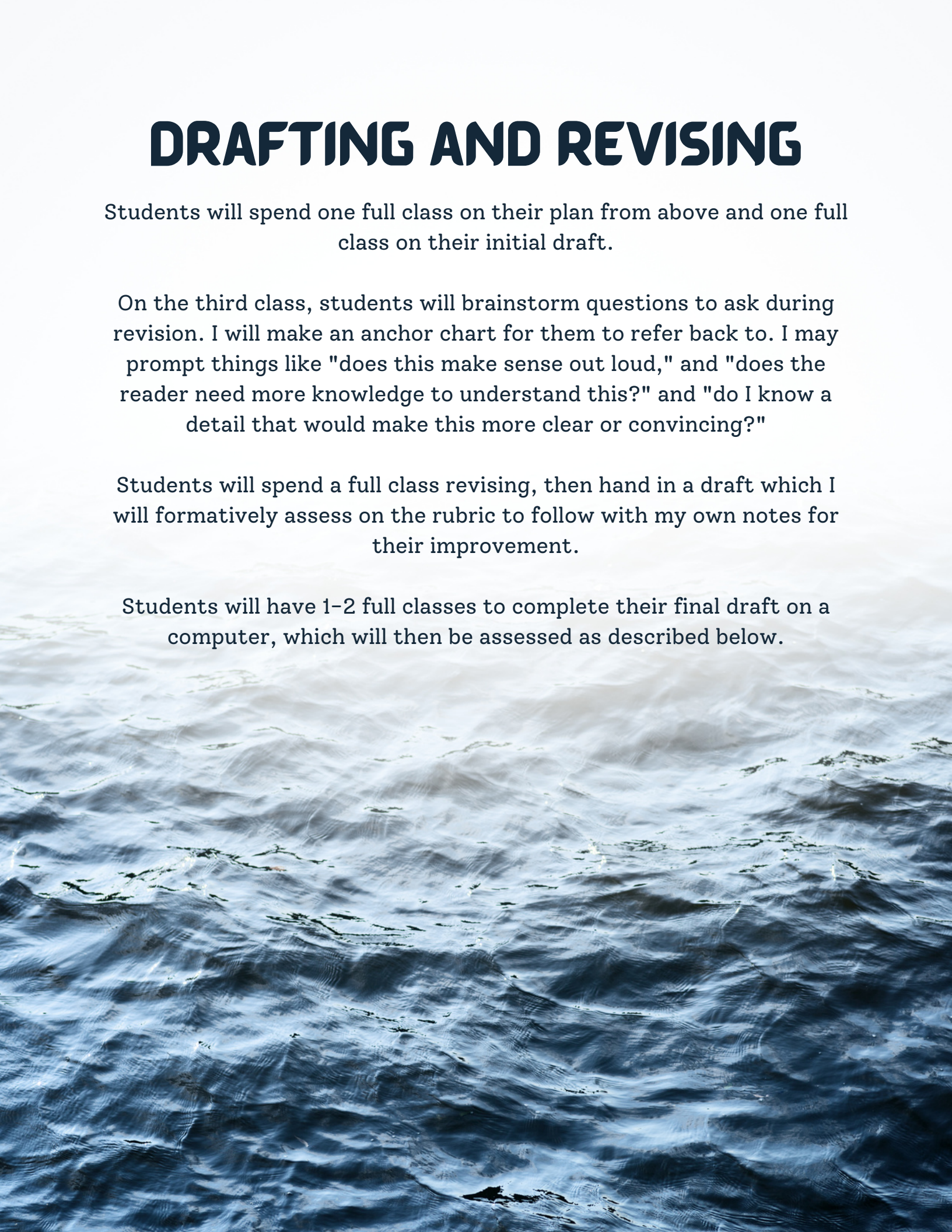
DRAFTING AND REVISING

Students will spend one full class on their plan from above and one full class on their initial draft.

On the third class, students will brainstorm questions to ask during revision. I will make an anchor chart for them to refer back to. I may prompt things like "does this make sense out loud," and "does the reader need more knowledge to understand this?" and "do I know a detail that would make this more clear or convincing?"

Students will spend a full class revising, then hand in a draft which I will formatively assess on the rubric to follow with my own notes for their improvement.

Students will have 1-2 full classes to complete their final draft on a computer, which will then be assessed as described below.



STUDENT NAME:

ELA ASSESSMENT RUBRIC

The following rubric is intended to be used in three ways:
First, the class discusses the expectations
Next, to formatively assess and provide next steps
Finally, to summatively assess and give feedback

Student used sources outside of their own knowledge to support their understanding of the prompt they chose. These sources were appropriate to the prompt and student demonstrated an understanding of the information in the sources they chose.	
Emerging, Approaching, Proficient, Extending (circle one)	Notes to Improve:
Emerging, Approaching, Proficient, Extending (circle one)	Final Feedback:
Student created and made use of a plan to write a well structured persuasive essay. All components of the plan were addressed and the plan connects to the essay.	
Emerging, Approaching, Proficient, Extending (circle one)	Notes to Improve:
Emerging, Approaching, Proficient, Extending (circle one)	Final Feedback:
Student wrote an essay that reflects knowledge of cultural, political, and historical information regarding oolichan. Student demonstrates that they have thought critically about their prompt.	
Emerging, Approaching, Proficient, Extending (circle one)	Notes to Improve:
Emerging, Approaching, Proficient, Extending (circle one)	Final Feedback:

Emerging - Understands parts of this idea and tried to include it in the work.
Approaching - Understands most parts of this idea and included them in the work
Meeting - Understands this idea and included it in the work
Extending - Reflected on this idea and added to it, included those additions in the work

STUDENT NAME:

SCIENCE ASSESSMENT RUBRIC

The following rubric is intended to be used in three ways:
First, the class discusses the expectations
Next, to formatively assess and provide next steps
Finally, to summatively assess and give feedback

Student selected a prompt and looked for information in an effective way to expand on their curiosity and prior knowledge.	
Emerging, Approaching, Proficient, Extending (circle one)	Notes to Improve:
Emerging, Approaching, Proficient, Extending (circle one)	Final Feedback:
Student identified local Indigenous peoples knowledge of the scientific or technological aspects of harvesting and processing oolichan.	
Emerging, Approaching, Proficient, Extending (circle one)	Notes to Improve:
Emerging, Approaching, Proficient, Extending (circle one)	Final Feedback:
Student reflected on ethics and values with regards to the science of environmental and cultural sustainability and considered a sense of place in their reflection.	
Emerging, Approaching, Proficient, Extending (circle one)	Notes to Improve:
Emerging, Approaching, Proficient, Extending (circle one)	Final Feedback:

Emerging – Understands parts of this idea and tried to include it in the work.
Approaching – Understands most parts of this idea and included them in the work
Meeting – Understands this idea and included it in the work
Extending – Reflected on this idea and added to it, included those additions in the work

JOURNAL REFLECTION

Our weekly journal entry this week will be about our cross-curricular unit on oolichan. Please share something you learned, something you are still wondering, and any other thoughts you have about oolichan or the activities we completed during this unit.

Show Me

Tell Me

Mathmatics

Volume & Finacial Literacy
Lesson Plans

BIG Ideas

Properties of objects and shapes can be described, measured, and compared using volume, area, perimeter, and angles

Curricular Competencies

Reasoning & Analyzing

- Model mathematics in contextualized experiences
- Use reasoning and logicto explore, analyze, and apply mathematical ideas

Understanding & Solving

- Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem solving
- Visualize to explore mathematical concepts
- Engage in problem-solving experiences that are connectedto place, story, cultural practices, and perspectives relevant to local First Peoples communities, the local community, and other cultures

Communicating & Representation

- Use mathematical vocabulary and language to contribute to mathematical discussions

Connecting & Reflecting

- Incorporate First Peoples worldviews and perspectives to make connections to mathematical concepts

Curricular Content

- Volume & Capacity
- Financial/Trade literacy - Informed decision making on saving and purchasing

FPPL

- Learning will support personal and community wellbeing, and engage in a holistic, reflexive, and reflective approach throughout the unit
- Create learning opportunities for students to make deeper connections between information/knowledge and the world outside classroom
- Use teaching strategies that promote student engagement
- Provide lots of opportunity for student talk, building of peer relationship, and sharing of learning
- Use local resources and contexts to support learning
- Provide choice and flexibility in learning activities so that different aspects of the whole self are attended to

Core Competencies

- Students will demonstrate communication and collaboration through group learning and co-teaching as well as peer feedback. They will think creatively, critically, and reflectiely

Design Considerations

Switch to small groups if students are uncomfortable sharing their ideas in larger groups to ensure learning outcomes for each student. “Body” breaks, when students need to take a break, allow space for a fun activity to move their bodies or rest their minds, however that might look like student to student (dancing, quiet time, etc.) When creating volume equations use smaller workable numbers (2’s,5’s,10’s) for students who are just grasping concepts and then use more challenging large numbers for those who need a challenge. Use physical manipulations for students who are able to use if not use digital or complete experiments with students with physical challenges. Encourage all students to write their findings, if this is not possible then speech to text tech may be used. Loud environments can be difficult to focus on, encourage students to use quiet voices and offer noise canceling headphones.

Volume & Capacity Lesson Outline

Students will be introduced to the vocabulary and concepts of volume and capacity through physical and digital manipulatives.

Lesson 1

- Vocabulary- Volume, Capacity, Area, Width, Depth, Height. Teacher will give definitions and visually show what each means. Students will be given an oppourunity to write down theres key terms and an associtaed photo in their math journals

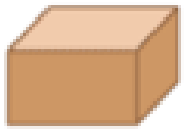
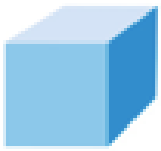
Lesson 2

- Teacher will revisit and review vocabulary
- Teacher will show 3D maniuplatives. students will be placed in small groups with a clipboard where they will organize the 3D shapes in order of greatest capacity to least (see next page for worksheet)
- Once all students have completed this task, student will gather around the teacher who will create a discussion on why the groups choose the order of greatest-least capacity.
- Teacher will then fill up each 3D objectwith water and weigh each object. Students will then record the data and then rearrange the order if required
- Using the key terms the teacher will review what was learned and answer any questions may have and bring up some other questions such as measurement error, are there other ways to find the capacity of an object?

Volume & Capacity Lesson Outline

Finding Capacity

1) Make your **hypothesis** in which object can hold the most amount of water to the least.
2) Collect your **data**, write down how much each object weighs in grams.
3) Find your **results**, write down the objects in order or greatest amount to least amount of capacity

Pyramid	Cone	Sphere	Cylinder	Rectangular Prism	Cube
					
EIGHT:___g	WEIGHT:___g	WEIGHT:___g	WEIGHT:___g	WEIGHT:___g	WEIGHT:___

HYPOTHESIS List in greatest capacity to least capacity	**RESULTS** List in greatest capacity to least capacity.

Volume & Capacity
Lesson Outline Cont..

Lesson 3

- Students will explore unit concepts(millimeter, milliliter, and liter), .Student will write down these key terms in their math journals. Teacher will show what each looks like using a graduated cylinder. Teacher will give examples on when we use these units for measurement mm - rainfall, ml - Juice containers, L - fuel, Milk, etc. Teacher will ask students if they know other items that are measured in these units? The teacher will then bring out different sized mason jars ranging from 100ml, 250ml, 500ml to 1L and ask How many 500mL mason jars of oolichan grease does it take to make 1 liter?

Lesson 4

- Students will revisit the capacity lesson and review the vocabulary before being introduced to how to measure the volume of a rectangular prism. Students will be given a brief introduction on how oolichans are cooked down in large vats resembling rectangular prisms. Students will gain an understanding of how to measure volume (V=LxWxH).
- Teacher will demonstrate with a plastic rectangluar prisim and 3D cubes, teacher will place cubes in rows stacked, then the teacher will count the cubes giving the volume of a rectangular prisim.
- Teacher will then have different stations with different sized rectangular prisms (some that look different but hold the same volume) and cubes for each group to rotate through and record their findings. Teacher will give explicit instruction and demonstrate again with the help of the students on how to complete this actiivity
- Once all groups go through the stations the teacher willl then go through the stations showing what the correct answer for each station and going over any errors/questions students may have

Financial Literacy Lesson Outline

Students will watch a short video on how oolichans are harvested https://www.youtube.com/watch?v=wEMQujyzHQA. this video will generate a discussion around the amount of time and effort it takes to create a jar of smoked oolichan or grease. During their ELA research students will understand the importance of oolichan grease to Indigenous People and how climate and industry has threatened its existence, therefore making oolichan grease a highly valuable product.

Teacher will pose different questions and senarios to generate dialougue Students will be asked what makes a good trade? for a jar/bucket of oolichan grease? Example - two cases of canned sockeye for a jar of oolichan grease OR a bag of potatoes for a jar of oolichan grease?

Students will then write in their math journals finishing the following prompts

A fair trade is ....

List 3 examples of what a fair trade for a jar of 500mL oolichan grease

List 3 examples of what a unfair trade for a jar of 500mL oolichan grease

Assessment

Formative assessment, through discussion points, predictions, and classroom activities. Math journals where students will be recording their findings and explain/justify their learning or ask further questions. After each mini lesson students will be given an opportunity for a private self-evaluation 1-4 (1 -I am still just learning need more guidance, 2 - I am starting to get it but have a few questions, 3 - I got this and can do it on my own, 4 - I got this and I can help a friend) this number will be written in their math journals where the teacher can support where needed.