UNBC UNIVERSITY OF NORTHERN BRITISH COLUMBIA **LESSON PLAN (PILOTED 2022)** **Candidate's name:** Kieron Vick

Grade/Class/Subject:	7/Science/Climate Change	School:	Grade 7 School
Date:	December 7 - Introduction	Allotted Time:	60 Minutes (Then Multiple Science Classes After to Work on it)
Topic/Title:	Climate Change/Climate Investigations		

1. LESSON ORIENTATION

Key resources: Instructional Design Map

Briefly, describe purpose of lesson, and anything else to note about the context of lesson, students, or class, e.g. emergent learning needs being met at this time, elements of focus or emphasis, special occasions or school events.
After gaining a better understanding of climate change processes and trends from prior lessons and innovative activities surrounding the topic, students will now be provided with the opportunity to apply their learnings to an investigation assignment. The lesson will start with the instructor providing different before and after images of climate areas or events that have impacted the world in various regions. There will also be an emphasis on regional areas, such as wildfire damage over the last half decade in our province so students can recognize how climate change harms the areas around us. Focusing on climate change within our region will also strengthen connections with people, place, and land, emphasizing Indigenous perspectives on climate change and further explaining how traditionally Indigenous peoples have always emphasized the importance of nurturing the nature we live within. Once the instructor has gone over the images with the students and has engaged in an academic discussion regarding climate impact on the areas, students can either partner up or work independently and pick a climate area/event to investigate further. During the investigations, students will explore the causes and effects of climate change on their respective images and make their predictions on how climate change will continually impact their area based on their previous learnings not only on the area but also from what they have learned from climate change when the topic was introduced. A presentation will be made at the end of their investigations that summarizes their learnings; this will also be a summative assessment as this investigation assignment will allow the students to demonstrate everything they have learned about climate change up to this point.

2. CORE COMPETENCIES

Key resources: https://curriculum.gov.bc.ca/competencies

Core /Sub-Core Competencies *(check all that apply):*	*Describe briefly how you intend to embed Core Competencies in your lesson, or the role that they have in your lesson.*

COMMUNICATION – Communicating COMMUNICATION – Collaborating THINKING – Creative Thinking THINKING – Critical Thinking THINKING – Reflective Thinking PERSONAL AND SOCIAL – Personal Awareness and Responsibility PERSONAL AND SOCIAL – Positive Personal and Cultural Identity PERSONAL AND SOCIAL – Social Awareness and Responsibility	Because this is an extensive lesson on climate change, all of these core and sub-core competencies can apply to the theme of the lesson. This lesson requires students to communicate and collaborate on different ideologies and diverse perspectives, promoting team building and supporting the well-being of students. For a climate investigation lesson, creative, critical, and reflective thinking is essential as students are required to reflect on how climate change has impacted different areas of the world and how it may have been impactful to them individually,

	think critically about what challenges climate change bring to the earth's present and future, and creatively on their investigations about how climate change has already affected certain regions in the world, and what may we do individually to make a difference regarding environmental sustainability. Concerning personal and social responsibilities, students need to respect the varying opinions of their peers on climate change, as this is a topic that shares many different perspectives and cultural influences. Students identify and develop an appreciation for different perspectives on issues. They show empathy, disagree respectfully, and create space for others to use their voices. They generate, use, and evaluate strategies to resolve problems, but also understand that their opinions matter and recognize that they can contribute to their well being. Students understand that their relationships and cultural contexts help to shape who they are. This includes culture in its broadest sense, including how one identifies in terms of ethnicity, nationality, language(s), abilities, sexual orientation, gender identity, age, geographic region, and religious or spiritual beliefs.

3. INDIGENOUS WORLDVIEWS AND PERSPECTIVES

Key resources: First Peoples Principles of Learning (FPPL); Aboriginal Worldviews and Perspectives in the Classroom

FPPL to be included in this lesson *(check all that apply):*	*How will you embed Indigenous worldviews, perspectives, or FPPL in the lesson?*

Learning ultimately supports the well-being of the self, the family, the community, the land, the spirits, and the ancestors. Learning is holistic, reflexive, reflective, experiential, and relational (focused on connectedness, on reciprocal relationships, and a sense of place). Learning involves recognizing the consequences of one's actions. Learning involves generational roles and responsibilities. Learning recognizes the role of Indigenous knowledge. Learning is embedded in memory, history, and story. Learning involves patience and time. Learning requires exploration of one's identity. Learning involves recognizing that some knowledge is sacred and only shared with permission and/or in certain situations.	Climate change is a topic that has significant relation to the FPPL. Learning that comes with it directly supports the well-being of the self, the family, the community, the land, and spiritually if you recognize that dimension, as climate change does influence the health of all these. Learning about climate change and actively investigating its impacts also enables us to be holistic, reflexive, reflective, experiential, and relational to the issues that arise from it, and also gets us to recognize the consequences of one's action, as climate change has a significant human impact that has negatively impacted the health of earth over history, which ties into learning is embedded in memory, history, and story. As previously stated, climate change and environmental health is emphasized by Indigenous peoples, therefore the role of Indigenous knowledge is instrumental when learning facts surrounding climate change.

	Finally, the learning of climate change processes involves patience and time, plus an exploration of one's identity concerning how climate change influences human behaviour and how we respond to the challenges it presents to human life.

4. BIG IDEAS

Key resources: https://curriculum.gov.bc.ca/ (choose course under Curriculum, match lesson to one or more Big Ideas)

What are students expected to understand? How is this lesson connected to Big Idea/s or an essential question?
Earth and its climate have changed over geological time: - How and why has the Earth and its climate changed over time? - How do people and their practices impact Earth and its climate? - Have there been many drastic changes to our climate?

5. LEARNING STANDARDS/INTENTIONS

Key resources: https://curriculum.gov.bc.ca/ (choose course under Curriculum)

Curricular Competencies: *What are students expected to do?*	**Content:** *What are students expected to learn?*
Planning and Conducting: - Collaboratively plan a range of investigation types, including fieldwork and experiments, to answer their questions or solve problems they have identified. **Processing and Analyzing Data and Information:** - Experience and interpret the local environment. - Apply First Peoples perspectives and knowledge, other ways of knowing. - Ways of knowing refers to the various beliefs about the nature of knowledge that people have; they can include, but are not limited to, Aboriginal, gender-related, subject/discipline specific, cultural, embodied and intuitive beliefs about knowledge. - Seek patterns and connections in data from their own investigations and secondary sources. - Use scientific understandings to identify relationships and draw conclusions. **Evaluating:** - Exercise a healthy, informed skepticism and use scientific knowledge and findings from their own investigations to evaluate claims in secondary sources. - Consider social, ethical, and environmental implications of the findings from their own and others' investigations.	**Evidence of Climate Change Over Geographical Time:** Change in climate affects: - The interconnectedness of plants and animals, and their local environment. - Changes to harvesting dates, changes to schedules due to early/later ripening and runs, lowered water levels in creeks, rivers and lakes, change in humidity impacts the ability to preserve salmon, etc. **The recent environmental impact of humans:** - Humans are capable of changing Earth's landscape, climate, and systems. - Efficacy of sustainable practices. **Physical records:** - Ice flow data, fossil record, glacier melting, wildfire impact, etc. **Local First Peoples Knowledge of Climate Change:** - Oral history, change in traditional practice (e.g., the timing of harvest has been impacted by climate change), etc.

Applying and Innovating: - Contribute to care for self, others, community, and world through personal or collaborative approaches. **Communicating:** - Communicate ideas, findings, and solutions to problems, using scientific language, representations, and digital technologies as appropriate. - Express and reflect on a variety of experiences and perspectives of place.	

6. ASSESSMENT PLAN

Key resources: Instructional Design Map and https://curriculum.gov.bc.ca/classroom-assessment

*How will students demonstrate their learning or achieve the learning intentions? How will they know if they are proficient? How will the evidence be collected, documented and shared? Will you use **observation**s, have targeted **conversations**, or collect **products**? Mention any opportunities for feedback, self-assessment, peer assessment and teacher assessment. What tools, structures, or rubrics will you use to assess student learning (e.g. Performance Standard Quick Scale)? Will the assessments be **formative**, **summative**, or both?*

Assessment for the climate investigation assignment will be used on an observational and formative scale during the investigation process, then summative for final presentations that sum up the work students have done. The observational and formative assessments will come from conversations about how well students identify climate issues, recognize different trends, and how they use the evidence of climate change damage on their climate change predictions based on what they have learned during their investigations, which will give the opportunity for feedback and my own perspectives to consider on the matter. These observations and formative assessments will not be graded but will be used for students to strengthen their learning.

A summative assessment will be provided with a mark after presentations have concluded, outlining all the target areas of the investigation assignment that will be provided on a rubric for the students. Students will receive this rubric before the assignment begins so they have an idea how to get the best mark while conducting their research/investigation prior to the presentation.

7. DESIGN CONSIDERATIONS

Key resources: Instructional Design Map

Make brief notes to indicate how the lesson will meet needs of your students for: differentiation, especially for known exceptionalities, learning differences or barriers, and language abilities; inclusion of diverse needs, interests, cultural safety and relevance; higher order thinking; motivations and specific adaptations or modifications for identified students or behavioural challenges. Mention any other design notes of importance, e.g. cross-curricular connections, organization or management strategies you plan to use, extensions for students that need or want a challenge.

To meet the needs of students for differentiation and so on, I will give these students extra support with an Educational Assistant so they can be assisted when participating in the assignment. To make it more comfortable and familiar, I will allow the students who require differentiation options for a more simplistic investigation rather than an unfamiliar region of the world. For example, I may get these students to instead focus on a region, look at weather trends in Terrace, and discuss how our area has been drier the last few summers and has been prone to drought, warmer and reaching hotter temperatures than normal, and so on. This is an easier approach to students with differentiation as it enables them to reflect on Terrace climate, which is something these students would be familiar with.

For students who struggle with presenting to the class as a whole or have behaviour issues in general, I will give them the option to present to me privately, easing them of anxiety and stress that may come with the pressure of presenting to their peers. If they do want to present to the class but with the help of an adult in the room, that will certainly be allowed.

If there are students who are away and need extra time to work on the assignment, I will allow that if it is completed in a certain timeframe, which will probably be no longer than a week after presentation day.

Required preparation: *Mention briefly the resources, material, or technology you need to have ready, or special tasks to do before the lesson starts, e.g. rearrange desks, book a room or equipment.*
- Before and after photos that show climate damage in different regions of world. - Example: Wildfire damage before 2018 and to 2023/2024 in the Okanagan region of British Columbia. - Booking the Library Computer Lab or Laptops so students can do their investigations. - Poster paper and supplies to go with it (markers, glue, etc.) if students choose to do a poster presentation.

8. LESSON OUTLINE

Instructional Steps	**Student Does/Teacher Does** *(learning activities to target learning intentions)*	**Pacing**
OPENING: *e.g. greeting students, sharing intentions, look back at what was learned, look ahead to what will be learning, use of a hook, motivator, or other introduction to engage students and activate thinking and prior knowledge*	After prior lessons on climate change and students have had the opportunity to familiarize themselves with specific topics regarding climate change. I will introduce the new "Climate Investigations", and explain that students will partner up or work independently if they choose and look at two images on a certain region of the world and investigate/research the impacts climate change has had on the respective pictures they have chosen. When presenting the images to the students on a big screen or projector, I will briefly talk about the context (where these images take place in the world, how many years apart are the two images, and have some discussion about what possibly has happened), not revealing too much as I want the students to investigate themselves with the knowledge they have gained from prior climate lessons. I will of course provide feedback and my interpretation if students have trouble. After introducing this assignment, I will let the students get into partners and then line them up to go to the library. If we do not have the library booked and instead have laptops for the classroom, then students can go lineup for those instead.	15 Minutes

BODY: • *Best order of activities to maximize learning -- each task moves students towards learning intentions* • *Students are interacting with new ideas, actively constructing knowledge and understanding, and given opportunities to practice, apply, or share learning, ask questions and get feedback* • *Teacher uses learning resources and strategic opportunities for guided practice, direct instruction, and/or modelling* • *Can include: transitions, sample questions, student choices, assessment notes (formative or otherwise), and other applications of design considerations*	Now that students have begun their investigation on a certain region, it is their responsibility to collaborate analyze the images and research the impacts of climate change on it. I will challenge the students to use their thinking and come up with some estimations on how climate change has impacted the region but will of course also allow online research if students are having difficulty making their own analysis. The main things I am looking for from the students in this assignment regarding climate change are: - Image analysis describing how climate change has changed the specific region in the time the two images are apart, and what differences in the landscape are apparent because of it. - The causes of climate change in the area: Different human interactions, weather, etc. - Ideologies on how to potentially mitigate the effects of climate change in the specific region (what can humans do to sustain the environment). - A final prediction based on evidence found and trends that have been occurring in the chosen region (an example being if a group is working on the Doomsday Glacier in Antarctica, they may predict the glacier will continue to rapidly melt if trends stay the same).	40 Minutes (with two extra class times to work on this, approximat ely 140 minutes total (50 minutes each extra class).

CLOSING: • *Closure tasks or plans to gather, solidify, deepen or reflect on the learning* • *review or summary if applicable* • *anticipate what's next in learning* • *"housekeeping" items (e.g. due dates, next day requirements*	Before wrapping up the first day of this assignment, I will make sure that students mark down any sources if they have found some vital information for their specific region on their computers and save their work if they have used Microsoft Word or PowerPoint to sum up their investigations. If students decide to do a poster instead of a digital presentation, I will be sure to collect all posters and have students hold on and organize any printouts that they may have printed for their posters. Presentations (fourth day): These will occur approximately 3 classes later, as students should have had more than enough time to conduct their investigations and interpret how climate change has impacted the region they have chosen together or independently. Depending on how ready students are to present, I will give them about 5-10 minutes to practice their presentations with their partner and myself. Once there has been some time to debrief and prepare, presentations will begin and students can talk about their investigations with the class, providing facts about the region and their own understanding of climate change's influence on it, and their prediction of what the future of that region may look like if climate change remains problematic. After a presentation has concluded, I will allow other students in the classroom to ask questions, and I will also ask a question myself for each group or individual.	5 Minutes Presentation Day: 60 Minutes

9. **REFLECTION** *(anticipate if possible)*

• *Did any reflection <u>in</u> learning occur, e.g. that shifted the lesson in progress?* • *What went well in the lesson (reflection <u>on</u> learning)?* • *What would you revise if you taught the lesson again?* • *How do the lesson and learners inform you about necessary next steps?* • *Comment on any ways you modelled and acted within the Professional Standards of BC Educators and BCTF Code of Ethics?* • *If this lesson is being observed, do you have a specific observation focus in mind?*