

# Haa Shuká Tundatáani: Global Warming in Alaska

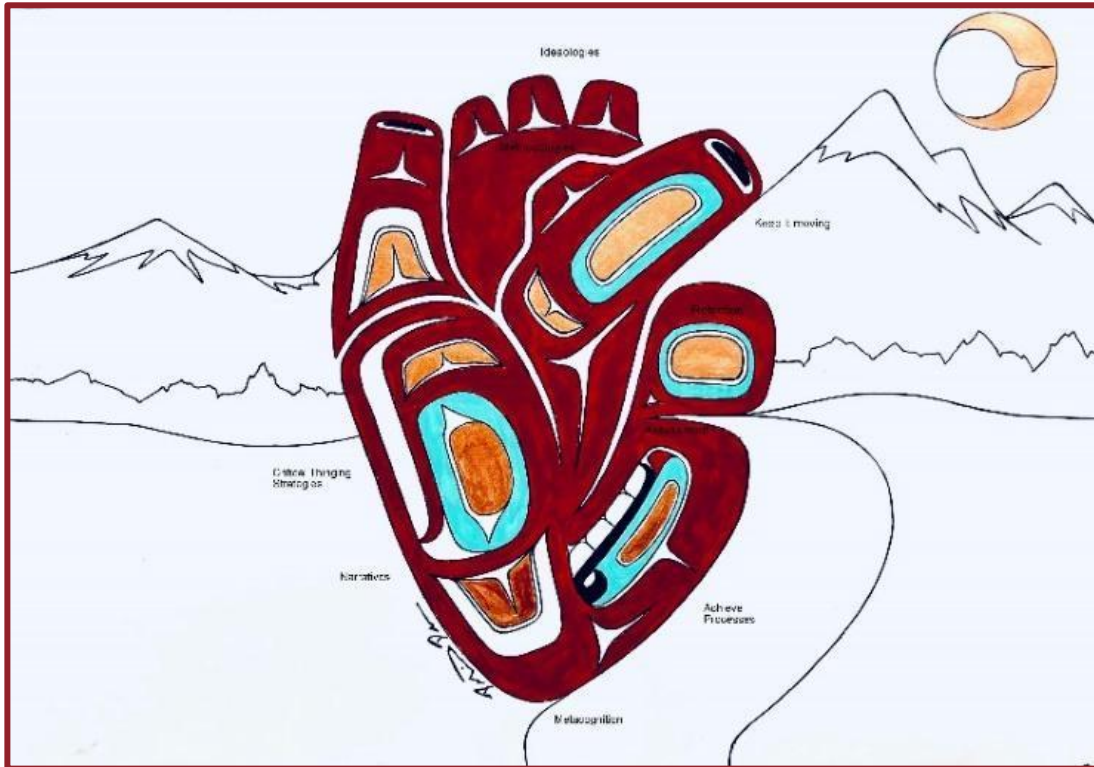


Figure 1: Design Attributions - Yanjeidí, Design by Delfine Decker, Goldbelt Heritage Foundation

## An Indigenous Framework for Learning

Haa Shuká Tundatáani represents a way of learning and understanding that connects us as people with the histories that have formed us, the knowledge we share today, and the world delivered by our future selves for future generations. This Indigenous framework seeks to heal.

This framework is designed around the heart at the center of existence, pumping what has existed before into what will exist in the future through the practice of listening, learning, and creation. This cycle of learning and belonging is in each of us and calls to be acknowledged and fostered by our surroundings and histories. Gunalchéesh, thank you to the Yanyeyidi whose story guides the visual representation and philosophy behind the heart of our learning framework and its existence rooted in landscapes.

UNIT PLAN	
Ideologies	
<p><b>Unit Author &amp; Contact:</b> <i>[What is the unit author's name and contact email if available for support?]</i></p> <p>Kathleen Galau</p>	<p><b>Originating Source:</b> <i>[Where is this information coming from? How can acknowledgements and recognition be shown?]</i></p> <p>The pHet greenhouse effect form is adapted from the handout by Kayne Spooner available on the pHet website.</p>
<p><b>Grade Range &amp; Subject:</b> <i>[What is your target audience?]</i></p> <p>Grades 9-12 Science</p>	<p><b>Time and Timing:</b> <i>[What is the approximate time investment for this learning effort?]</i></p> <p>3 Weeks</p>
<p><b>Materials:</b> <i>[What materials and/or room arrangements are necessary for the scope and sequence of the unit?]</i></p> <p><b>Lesson 1</b> Copies of the carbon cycle paper and the three other cycles. Example google slide and storyboard printed and digitally if possible</p> <p><b>Lesson 2</b> Prior to the lesson set up the lab equipment. Each lab group will need a small nalgene bottle, 400 g baking soda, 200 ml vinegar, electronic scale, computer, a biochamber 250, a co2 gas sensor, a thermometer, and a heat lamp. Two or more groups should not have the baking soda and vinegar, they will be doing the control groups. Set up group areas where each group can plug in a heat lamp and keep it above the counter for 30+ minutes. I prefer to set up group lab sets, so I put everything that each group needs in a basket and one member comes up to get it. This minimizes students wandering around off task and each group has exactly what they need. They are also responsible for cleaning everything and putting it away. IPCC greenhouse effect pages, available at <a href="https://ei.lehigh.edu/learners/cc/readings/whatgreenhouse.pdf">https://ei.lehigh.edu/learners/cc/readings/whatgreenhouse.pdf</a></p> <p><b>Lesson 3</b> Need computers for the simulation then small groups for discussions. May need to set up the room for the Fishbowl activity.</p>	

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**Lesson 4** Students will need access to computers and a copy of the Carbon Footprint handout the day before the activity.

**Lesson 5** Students should be in groups and need room to work on posters.

Students will need poster paper, markers, and poster instructions. You may want to print out sections of the report for groups as well.

**Lesson 6** Access to the movie *Between Earth and Sky* and a projector and Elders.

**Lesson 7** Climate change webquest below, computers, poster materials.

**Lesson 8** Computers and handouts.

**Unit Name & Level of Integration Required:**

*[Indicate the title and the level of complexity required for successfully implementing this unit.]*

- L1 - this unit is off-the-shelf with materials that can be found in most classrooms or schools.
- L2 - this unit requires pre-planning such as gathering relevant materials, collaborating with GHF Indigenous educators, cultural bearers, and/or language speakers.
- L3 - this unit is best taught with a GHF Indigenous co-teacher due to the expertise, cultural knowledge, perspective, and/or language required for learning

**Haa Shuká Tundatáani:**

*[Provide a unit overview that describes how and why this curriculum engages prior knowledge and experience, is meaningful to the present, and builds skills, knowledge, and/or curiosity for the future. Where is the unit coming from and where is it going?]*

**Essential Questions:**

*[What are two compelling questions that will foster inquiry, understanding, and transfer the learning?]*

- How does increased amounts of carbon dioxide affect temperatures?
- Do greenhouse gases increase temperature? If so, what is the effect of this?
- Is Alaska unique in how climate change impacts it?
- What would make our local place unique in respect to the rest of the world in the impacts of climate change?

**Student Skill Sets & Understandings to Be Developed:**

*[What will students be able to do with this new knowledge and skills?]*

- Discussion behaviors to validate climate change as a scientific concern on a global scale.
- Separate opinions from scientific facts on the topic of climate change using a variety of resources including primary sources

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- Create and run an experiment related to climate change.
- Inform others about climate change through writing and speaking. .
- Address the concerns of climate change scientists and put forth ideas on how individuals, companies and governments can make a difference through group discussions using sources to support points
- Discuss how and why climate change is affecting Alaska and Indigenous populations disproportionately.

**Standards / Established Goals:**

*[Select the academic and cultural standards, both state and local, that will remain the focus.]*

**Methodologies**

**Methodologies**

*[Choose two teaching methods from the following that will be guiding your instruction.]*

- Oral narration
- Inquiry-based
- High-tech approach
- Kinesthetic learning (hands-on, tactile)
- Direct instruction
- Project-based
- Cooperative learning

**Cultural Engagement:**

*[Describe in what ways this curriculum connects students with and elevates Tlingit Aani (land) and/or Tundatáani (ways of knowing).]*

In lesson 6 students watch the movie Between Earth and Sky, a documentary on the impact of global warming on the indigenous people of Alaska. The Elders in the movie talk about the changes they have seen in their lives. Afterward there is discussion with local elders on the same topic. They are also empowered and encouraged to talk about global warming

**Elder / Culture Bearer Role:**

*[Define elder / culture bearer involvement in the curriculum, ranging but not limited to, helping to author original content, gathering materials, presenting to students, etc.]*

Elders are asked to share their experience of how a warming environment has brought change over their lifetime. Then they will encourage and empower the students to be the agents of change to protect the land and the people.

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by the scientists that were in the film. The performance task is to make a difference by talking about it with businesses, government officials, and their own families. A káx yan aydél wé t'l'átgi: We are Stewards of the Air, Land and Sea.

**Integrated Media Element(s)/Resources:**

*[References, direct links, and/or attachments to related AV materials.]*

[What is the Greenhouse Effect?](#)

Between Earth and Sky  
IPCC climate report

**Differentiation Strategies:**

*[In what ways will you differentiate this lesson for your variety of learners your classroom?]*

**Critical Thinking Strategies**

**Home Connections:**

*[How are students, families, and the community connecting from this learning effort? Are there opportunities for students to “teach or share” their new knowledge? Provide talking points for students to share with their families through discussion or activities. What do your students and their families value and how can you build on what they know and do outside of school?]*

Lesson 4: Carbon footprint. Students are asked to get some information from their household on energy bills, travel, and heating. This gives them the opportunity to discuss what they are learning.  
Lesson 6: Talk about global warming with your family.

**Unit Progression & Lesson Descriptions**

*[In 1-2 sentences, describe the scope and objective of each lesson. List any related performance tasks with each lesson.]*

1. [Carbon Cycle](#)- how carbon moves through the biosphere n Alaska. Click [here](#) fore lesson 1.
2. Validating the greenhouse effect: Basic experiment that provides evidence that more carbon dioxide results in higher temperatures under the same conditions. Click [here](#) for lesson 2.
3. [The Greenhouse Effect pHet lab simulation](#). Click [here](#) for lesson 3.

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4. Calculating [Western culture carbon footprint](#) and Indigenous Culture carbon footprint. Click [here](#) for lesson 4.
5. Consequences of a warming Alaska part 1: The science. Click [here](#) for lesson 5.
6. Consequences of a warming Alaska part 2: The people. Click [here](#) for lesson 6.
7. Hope for a new generation. Click [here](#) for lesson 7.
8. Performance task: Make a difference. Click [here](#) for lesson 8.
9. Speak Up Final - [description and rubric](#)

**Tlingit Phrases:**

*[What Tlingit phrase captures and embodies the new, desired knowledge or skill?]*

- *Kaa wudujeeyí ka kaa x'éix dus.aaxí ch'áagu haa shagóonx'ich kusteeyí: Discipline and Obedience to the Traditions of our Ancestors (Discipline and obedience to the traditions of our ancestors)*
- *Sh yáa ayakdané ka ldakát káa yáa at uwanéi: Respect for Self, Elders and Others (Self-respect and respect for everyone)*
- *Ldakát át a yáa ayaduwanéi: Respect for Nature and Property (All things are respected)*
- *Tlél kútx i yáa wdawóodlik: Patience (Have patience [don't be in a hurry])*
- *Toowú klagé haa t'aakx'í, ka haa naax sateeyí, ka haa kusteeyí: Pride in Family, Clan and Traditions is found in Love, Loyalty and Generosity (Pride in our family and our clan and our traditions)*
- *Wooch eenx haa isteeyí, wooch dusxáni, wooch éet wutudasheeyí (When we're together, we love each other, we help each other)*
- *Yee toowú klatseen: Be Strong in Mind, Body and Spirit (Be strong)*
- *Lishoogú át kanaylaneek: Humor (Tell funny stories)*
- *Dikéex' wooch gayilsháat: Hold Each Other Up (Hold each other up)*
- *K'idéin at sa.áx ka a yáa awuné wáa sá i daa yadukaayí: Listen Well and with Respect (Listen well and respect what people say to you)*
- *Tula.aan tin yóo x'adutaan: Speak with Care (People speak with care)*
- *A káx yan aydél wé tl'átgi: We are Stewards of the Air, Land and Sea (Take care of the land)*
- *Yáa at wuné haa Aan Káawu jeeyís: Reverence for Our Creator (Reverence for our creator)*
- *Wóoch een kayéix yáx nagatee: Live in Peace and Harmony (Let there be peace and harmony among each other)*
- *Yee gu.aa yáx x'wán: Be Strong and Have Courage (Have courage)*

**Pinnacle Vocabulary:**

*[Choose up to three Tlingit and English vocabulary terms that will be emphasized throughout the unit.]*

- Anthropogenic climate change
- Fossil fuel

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- Changing climate

### Check for Understanding

**Culminating Community Building Activity Project:**

*[Outline the ways in which students might demonstrate their new understanding and/or skills at the end of the unit. How will you make this a community-based task?]*

**Formative Evaluation:**

*[In what ways will you help students identify their strengths and weaknesses and how will you recognize areas students may need additional support?]*

**Summative Evaluation:**

*[Describe by what criteria will student demonstration of new knowledge or skills be measured.]*

### Reflections

**Student Self-Reflection:**

*[In what ways will there be space created for student voice and reflection opportunities?]*

- Fishbowl Discussion
- Small Group Discussions
- Whole Group Discussions
- Journal writes
- Performance task

**Educator Notes & Reflections:**

*[What additional background information would be helpful for an educator to deliver this unit? Any comments, questions, or suggestions regarding the unit.]*

If you are not familiar with global warming, the greenhouse effect, start with the NOAA website at [Toolbox for Teaching Climate & Energy | NOAA Climate.gov](https://www.noaa.gov/education/outreach-and-communication/toolbox-for-teaching-climate-energy) There are good, short lessons that will help you understand the science.

**Acknowledgements:**

*[Please use this space for any further acknowledgements or references.]*

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***\*\*scroll down for lesson template (copy and paste to duplicate the template for additional lessons).***

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Learning Plan (Lesson Template - copy and paste as needed for number of lessons)	
<p><b>Lesson Number &amp; Title:</b> <i>[Indicate the lesson number within the unit sequence.]</i></p>	<p><b>Time &amp; Timing:</b> <i>[# of classes, # of minutes, placement within the academic calendar as needed, etc.]</i></p>
<p><b>Materials Needed:</b> <i>[Includes room arrangement considerations.]</i></p>	
<p><b>Differentiation Strategies:</b> <i>[In what ways will you account for all student needs through intentional processes, content, learning environment or classroom design, materials, evaluation, and/or products?]</i></p>	
<p><b>Lesson Progression:</b> <i>[Describe the steps required to activate student prior knowledge and include student participation from the beginning to the end of the lesson.]</i></p> <p><i>Hook:</i></p> <p><i>Building Understanding:</i></p> <p><i>Concluding Activity:</i></p>	
<p><b>Related Performance Task &amp; Additional Resources:</b> <i>[Provide any additional information, resources, articles, or references required.]</i></p>	

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