Science, Technology, Engineering, Arts, and Mathematics (STEAM) Curriculum as a Lens for Language and Culture Revitalization in Rural Alaska

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Our Story











Session Topics

Part 1: The history of the Cu'pik immersion wing

Ways in which we integrate Cup'ik STEAM into the Immersion wing curriculum.

Part 2: Work session Sharing

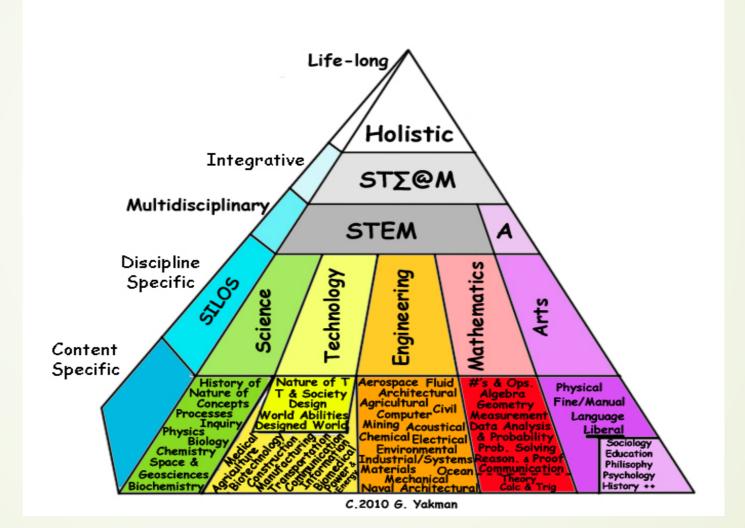
Chevak School: The Cup'ik Immersion Wing



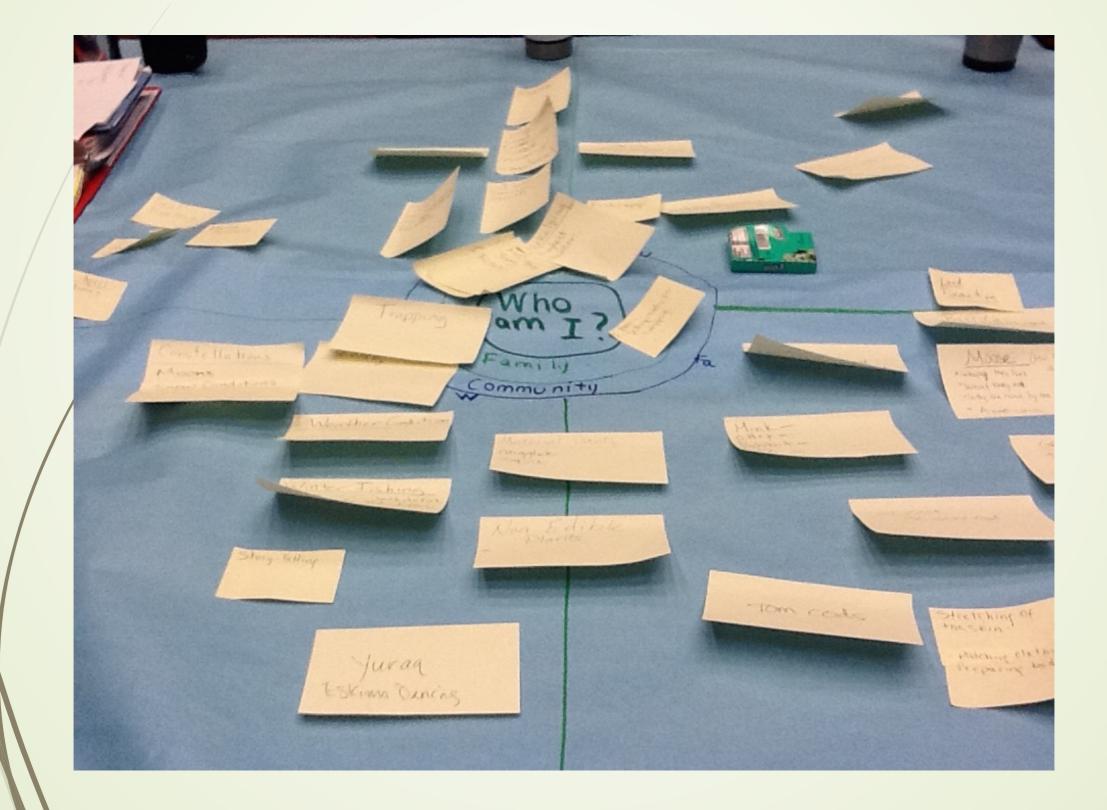
Two Rivers of Knowledge: Elder Aiggailnguq David Boyscout



Culturally Sustaining STEAM



Curriculum Map



Curriculum Map

Summer - Fish Camp

Set nets, drift nets, Clamming, Seal hunting, Gathering <u>Science</u> Biology-anatomy of wildlife: Subsistence Preparation of Fish - Salmon (King, coho, chum, silver, pink), halibut, whitefish; clams; greens; Physical-Weather, Land formations - maraq (low gournd); nunapik (high ground); rivers, ponds, lakes, ocean (fresh water, salt water); Social: Story telling-cultural history; environmental changes; <u>Mathematics:</u> Probability, Numeration, Geometry, Measurement - Construction; Shelter Frame, Fish Rack, Smoke house, stove ... <u>Writer's Workshop</u>: Oral Story telling, Cup'ik Reading Materials, Composition of play or story as related to content.

Spring – Bird-Seal hunting, Gathering

Science Biology-anatomy of wildlife: Bird nesting & incubation, Subsistence Preparation of spotted or bearded seals (meat & oils), Birds (Swans, Cranes, Ptarmigan, & vairous geese), tomcods, and smelts Physical-Weather, Sea Ice Conditions, Survival Skills - Social: Story tellingcultural history;

<u>Mathematics:</u> Probability, Numeration, Geometry, Measurement – Construction; Shelter Frame, Fish Rack, Smoke house, stove ...

Writer's Workshop: Oral Story telling, The Boy Who Went to Live with the Seals, Journaling, Composition of play or story as related to content. Kapukaraq Winter –

trapping, net fishing, manaq, Cultural Arts

<u>Science</u> Astonomy-constellations, moons, planets, stars; Biology-Small animals-mink, fox; Subsistence Preparation of Fish -Pike, lush, tomcods, white, black Physical-Water Cycle, Weather-Storms, Wind, Snow - Survival; Social: Story telling-cultural history; Cultural arts & tools-traps, manaqs, sleds, carvings, drums, Skin Sewing, Eskimo Dance; <u>Mathematics:</u> <u>Writer's Workshop</u>: Oral Story telling, Cup'ik Reading Materials, Composition of play or story as related to content.

Summer/Fall – Berry Camp & Moose Hunting Science-plant identification, nutritional value of plants, edible vs poisenous; Math-portioning, measurement; Geographynavigation (trditional trails, GPS), Locations of family camps; Writer's Workshops-Field Notes, journaling, Quissanaq Atlas, Encounter stories-ircinraqs, traveling encounters

STEAM in Cup'ik Culture and Language

E-books

Mouse Food

Fish Traps

E-Books



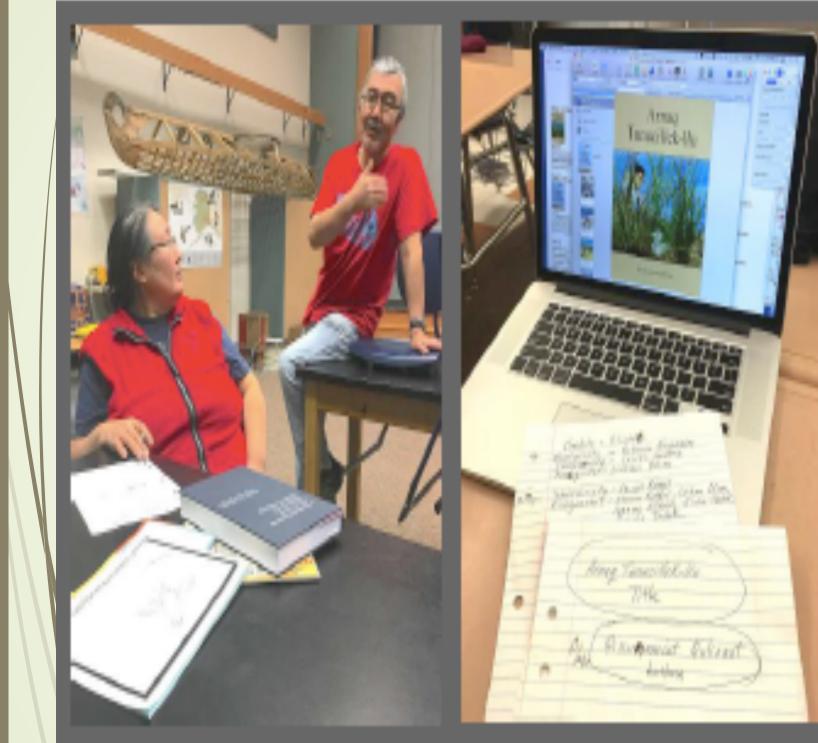
Art integration by students

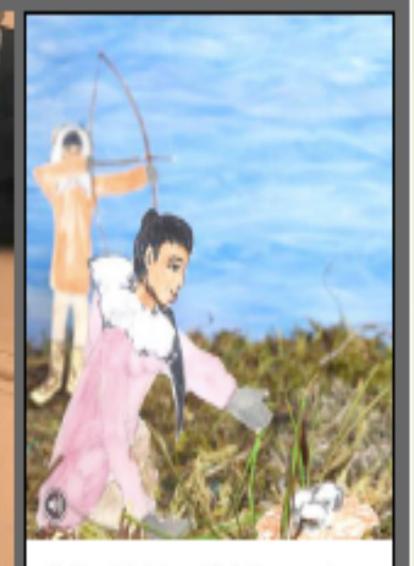


Dense Weinstein Connections Allow Allowers Transmitter, No. affection beauti



A team of Cup'ik speakers work on translating part of the Arnaq Tunucillek-Ilu book for digital publication.





Ner'rraarlutek-llu makirelutek paugavet. Aataq urluvelgirluni, arnaq-llu issratelgirluni.

Deciding on the best words to use for the book's title. Transcribing the story from spoken Cup'ik, to written, to digital text. A finished page from the Arnaq Tunucillek-Ilu digital book.

Evidence of STEAM in Cup'ik Ways of Knowing in Science

Mouse Food: Learning about the tundra



Mouse Food: Measuring, sorting, classifying and identifying







Plant Identification







Weather and the Water Cycle

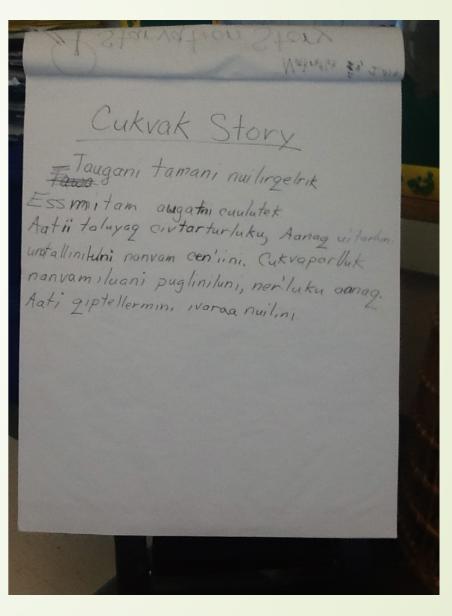


Virtual Field trip on Marine Mammals

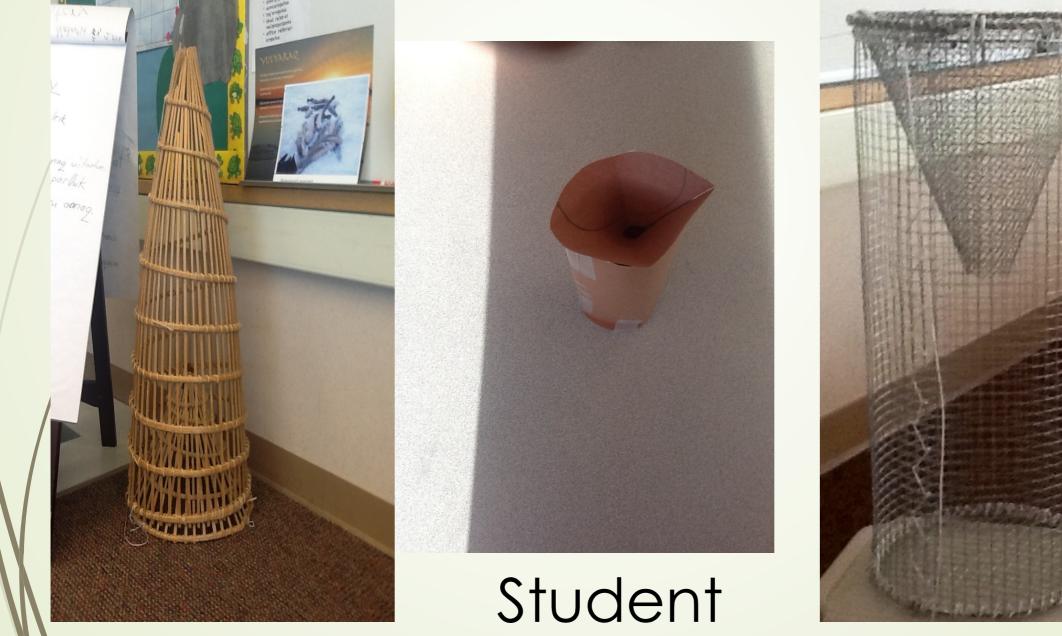


Elder Knowledge and Literacy





Math,Technology, & Engineering: Fish Traps



Traditional

Student Model

Modern

Comparative Fish Anatomy Lesson



Mapping: The Importance of Place



Bird Migration and Nesting



Art and Cup'ik Language



STEAM in Alaska

- A means to validate Ancestral knowledge
- A lens to empower Alaska Native cultures
- A vehicle to foster bilingual and bicultural students
- An approach to encourage students to enter STEAM fields and take charge of Alaska's future
- A integral part of K-22 curriculum

Your Turn!

- Think about STEAM present in your culture
- Choices:
- 1. Outline a curriculum map that aligns with your cultural knowledge system about nature
- 2. Think of STEAM lessons that can be included in your curriculum.
- 3. Can technology in the classroom support language, culture and sense of place in your village/ city/ school?

Table Discussion

 Please share your work in your table with colleagues from a different place.

Quyana Cakneq!

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