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 Aigginnguq David Boyscout
Culturally Sustaining STEAM
Curriculum Map
Curriculum Map

Summer - Fish Camp
- Set nets, drift nets, Clamming, Seal hunting, Gathering
  - **Science** Biology - anatomy of wildlife; Subsistence Preparation of Fish - Salmon (King, coho, chum, silver, pink), halibut, whitefish, clams, greens; Physical - Weather, Land formations - maraq (low ground); nunapik (high ground); rivers, ponds, lakes, ocean (fresh water, salt water)
  - **Mathematics** Probability, Numeration, Geometry, Measurement - Construction;
  - **Social** Story telling - cultural history; environmental changes;

Spring - Bird - Seal hunting, Gathering
- **Science** Biology - anatomy of wildlife; Bird; nesting; & incubation; Subsistence Preparation of spotted or bearded seals (meat & oil); Birds (Swans, Cranes, Ptarmigan, & various geese); tormocts, and smelts; Physical - Weather; Sea Ice Conditions; Survival Skills - Social; Story telling - cultural history;
- **Mathematics** Probability, Numeration, Geometry, Measurement - Construction;
- **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
- **Science** Astronomy - constellations, moons, planets, stars; Biology - Small animals - mark, fox, Subsistence Preparation of Fish - Pike, lamp, tormoct; white; black Physical - Water Cycle; Weather - Storms, Wind, Snow - Survival; Social; Story telling - cultural history; Cultural arts & tools - tracs, manaq, sleds, carvings, drums, Skin Sewing, Eskimo Dance;
- **Mathematics**...
- **Writer's Workshop** Oral Story telling, Cupik 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 poisonous; Math - portioning, measurement; Geography - navigation (traditional trails, GPS), Locations of family camps;
- **Writer's Workshop** Field Notes, Journaling, Quissanaq Atlas, Encounter stories - inrimaq, traveling encounters
STEAM in Cup’ik Culture and Language

- E-books
- Mouse Food
- Fish Traps
E-Books

Art integration by students
A team of Cup’ik speakers work on translating part of the *Arnaq Tunucillek-llu* book for digital publication.
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-llu 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
Berry Picking
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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Selected References

