Education Outreach Program

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BNZ Education Outreach Program

• Arctic and Earth SIGNs (GLOBE)
• Arctic Harvest: Public Participation in Scientific Investigations
• Santa Ana Community College Mesa Research Immersion
• Fostering Science Camp
In a culturally responsive learning framework?
An intergenerational, hybrid citizen science model

Design and implement stewardship project to help community address the climate change issue

Learn from elders, long-term residents, and scientists about signs and impacts of climate change.

Discover what youth and adults know
Identify key climate change issue for community
Brainstorm investigation and stewardship ideas

Do culturally responsive activities to establish knowledge base
Talk with a NASA scientist
Select inquiry question
Identify aligning larger scale citizen science efforts (GLOBE, etc)

Make sense of research by analyzing data and reviewing information from local experts, NASA data, and existing research

Collaborate with a scientist & community to develop and implement investigation

Explore

EXPLORE

SHARE

EXPLORE

EXPLAIN

EXPLAIN

SHARE

APPLY

EXPERIMENT

EXPERIMENT

Arctic & Earth SIGNs

**Audience:** Educators, community members, elders, and youth in rural and indigenous communities

**Key activities:**
- “Climate Change and My Community” course for community teams
- Culturally responsive learning supports
- Live conversations with NASA and Arctic scientists (online or in-person)
- Community project designed to investigate and address a pressing climate issue in their community

**Arctic and Earth SIGNs Big Idea:**
We can make a difference on climate change issues by listening, inquiring, observing, and then acting.
Kwethluk example

**Team:** Ket'acik & Aapalluk Memorial School students, teacher Whitney Spiehler, elder and teacher Pauline Morris.
Kwethluk example

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Community concern: Thawing permafrost and changing hydrology is causing people to lose their homes into the river.
Kwethluk example

Team: Ket'acik & Aapalluk Memorial School students, teacher Whitney Spiehler, elder and teacher Pauline Morris.

Local Investigation: What is the rate of erosion occurring and what soil and disturbance factors influence the rate?

Community concern: Thawing permafrost and changing hydrology is causing people to lose their homes into the river.

Project match: GLOBE soils and UCAR National Water Model (INCLUDES)
Stewardship Action

- Petitioned village council for no-wake zone
- Designing alternative anchoring system design
The Arctic and Earth SIGNs inquiry model
Kwethluk Project

Elder and community members shared stories of river and soil changes and the problem of losing homes to the river.

Learning about river flow, soils, permafrost, and climate change
Selected inquiry question: What is the rate of erosion occurring and what soil and disturbance factors influence the rate?
Matched with UCAR INCLUDES citizen science effort

Elder and teacher, elder, and community members determine focal issue:
Thawing permafrost and changing hydrology is causing people to lose their homes into the river.

Letter writing to village council for no-wake zone
Alternative anchoring system design

Synthesize local knowledge and analyze data to answer question
GLOBE data entry, National Water Model validation data

Collaborate with Dr. Sparrow & community to develop and implement GLOBE soils investigation

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Matched with UCAR INCLUDES citizen science effort
Arctic and Earth Community Projects

- 17 projects for 2017-18 cohort

- Topics include:
  - fish habitat
  - weather changes
  - water quality
  - berry conditions
  - soil moisture and erosion
  - soil active layer monitoring
Educator and community member workshops by the numbers 2017

13 Arctic and Earth SIGNs workshops delivered

192 formal and informal science educators and community members trained

853 students engaged in climate change learning using Arctic and Earth SIGNs activities
Santa Ana Community College MESA Research Immersion
Office of Admissions

- Highlight Arctic science strengths at UAF
- Highlight undergraduate research opportunities
- Recruit top STEM students from community colleges
- Recruit top STEM students from Alaska high schools

BNZ

- Engage students in LTER science
- Provide research opportunities for students
- Reach students underrepresented in STEM fields
- Cultivate research relationships across diverse Alaskan communities
Climate Change
Personal and Arctic connections

Summer 2017 Arctic and Earth SIGNS
Santa Ana College - Alaska Research Expedition

14 members - Public

Search Community

Katie Spellman: Wow! What really strikes me about your map is the connections between social, emotional, ecological, and economic well-

Paula RiLu: Discussion

There is an excluded location in Guerren, Mexico that holds a lot of sentimental value to my family and me. All of us have gone to this location while the river was still flowing. We have tried to make a change in this particular area because it has become polluted, but it takes more than four people to make a transformation in the right direction and to make it more sanitary for others to enjoy it. Even though it seems like it is far away from repair, I am more than willing to aid all the corners in my beloved hometown for other generations to prosper in.
Exploring geothermal energy with Bernie Karl
Field methods and research design training on UAF campus
Field research at Caribou Poker Creek Research Watershed (BNZ LTER)
Soil sampling
Data analysis crash course with Katie
Meet and greet with Deans Layer and Goering and students
• Society of Hispanic Professional Engineers Conference
• Santa Ana STEM Week conference
• Rancho Santiago Community College District Board of Trustees Meeting
• Great Minds in STEM Conference
Amazing relationships
Fostering Science

- https://sites.google.com/alaska.edu/fosteringscience/2018-camp