

STEM Teaching in Rural Areas using Cultural Knowledge Systems: Testing a model for community-engaged, place-based resource development

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Overview

In rural Alaska cultural knowledge systems have been in place for millennia. This project leverages those living resources to provide place-based focus and elevate the priority of science education in rural areas. Community members organized into a TRACK Team select the curricular theme, identify related themes, provide content, and review all resources developed. An Iñupiaq scholar conducts the project research on the effectiveness of the Cultural Connections Process Model, and analyzing the results achieved when resulting resources are implemented.

Adapting to the pandemic

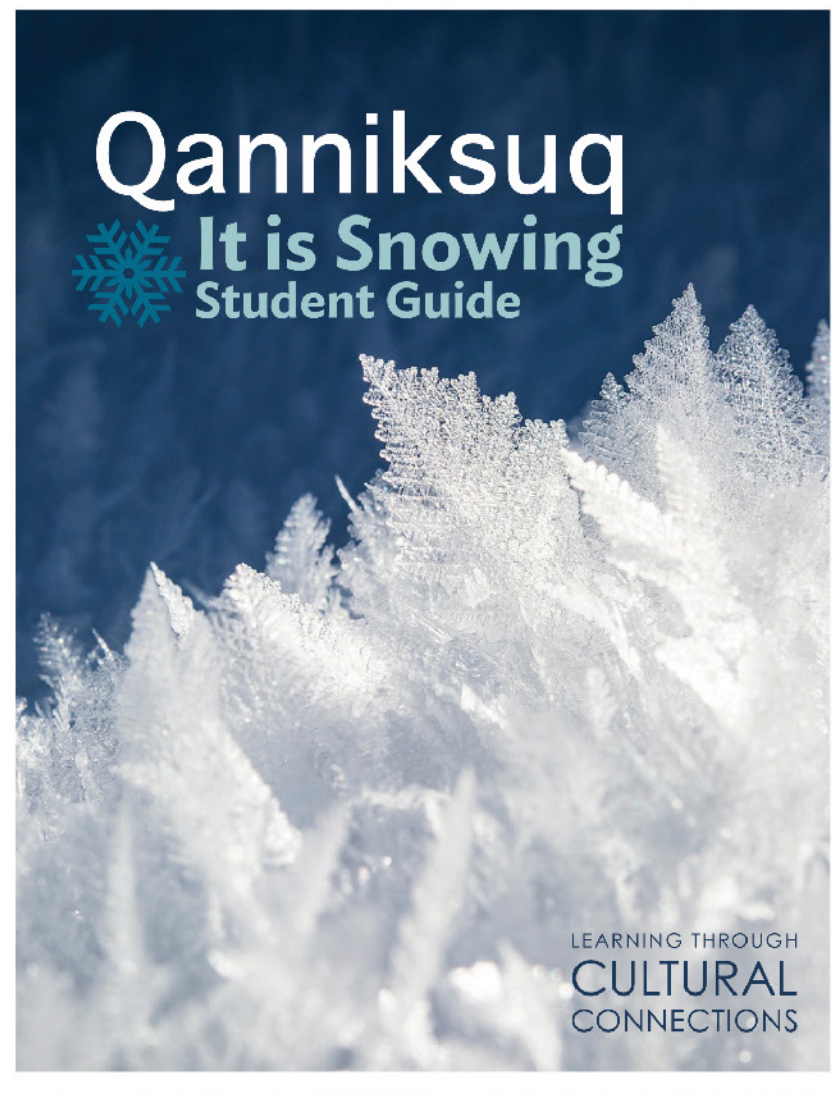
- To support pilot-testing we:
- Created a Canvas version of the course that was pre-loaded onto devices for remote, off-line learners.
 - Developed instructions for adapting each lesson for social distancing, remote delivery.
 - Migrated consent forms and research instruments to electronic platforms.
 - Provided 1:1 student supplies to prevent transfer of germs.
 - Pre-packaged student supplies for easy distribution by teachers.
 - Met with pilot-test teachers twice via Zoom for orientation and overview.

Products

Five TRACK Talks



Qanniksuq: It is Snowing curriculum



Iñupiaq Pronunciation Guide

Iñupiaq Vocabulary

LEARN KEY IÑUPIAQ VOCABULARY TERMS RELATED TO QANNIKSUQ: IT IS SNOWING		
	aiviq (walrus)	
	amaḡuq (wolf)	
	anigutyaq (snow house)	
	anḡi (wind)	
	apun (snow)	
	Apun Iñuutichigatuaq (Snow and Arctic Life)	
	Apun Summigituunuuq (Snow Changes)	

Cultural Connections Process



Preliminary outcomes and recommendations

- High student interest and engagement in the hands-on lessons.
 - Improved student retention of concepts.
 - Enthusiasm for the TRACK Talk videos due to local relevance, relatable local experts.
 - Rhythmic 'content--activity' design helped to make lessons achievable.
- Recommendations:
- Teach collaboratively with the local Indigenous language teacher.
 - Provide links to YouTube videos, other external resources for easy access to background information on concepts (i.e. molecular motion, heat transfer).

Next Steps

- Revise materials based on pilot test results
- TRACK Team review
- Deliver teacher professional development (for credit)
- Distribute and implement resources districtwide
- Share summative research findings