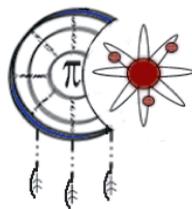


*...you got to know the both sides of it*

# Science

*in Relation to*

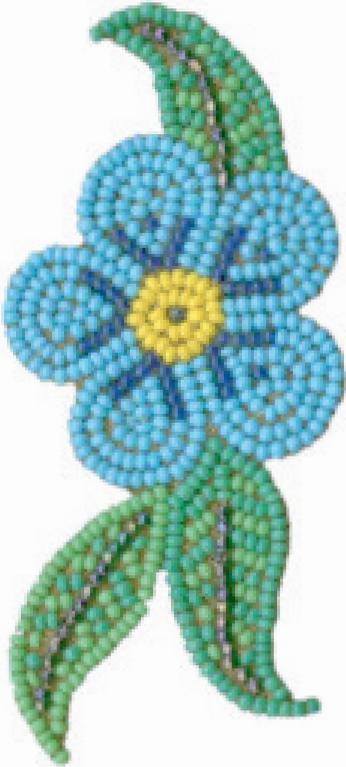
# Traditional Native Ways



Spring 2013



## Dear Reader



**Team  
members  
developed  
key evaluation  
skills for  
telling a  
project's story.  
Amelia Ruerup**

The following pages tell a story, and like many stories it tells about a journey that takes place over time. This journey begins with the elders. They tell stories about growing up and their experiences with education. They talk about how to know yourself, and why it is important to know your history and language. These elder stories provide direction for the journey.

On the journey are today's students –the *Gaalee'ya Project* students. The students' share their voice to *demonstrate* the impact of how the *Gaalee'ya Project* has influenced their *understanding of science in relation to traditional Native ways of knowing*. Many of these Gaalee'ya students have been involved with the project for all five-years, and all students are taking university courses in science, technology, engineering, or mathematics (STEM).

The story ends with telling about *Putting It Together* - this booklet, the result of the work of a *Team* of Alaska Native students and principal from Evaluation Research Associates LLC (ERA). The Booklet is the final evaluation of the *Gaalee'ya STEM Project*, a five-year grant awarded to the University of Alaska Fairbanks (UAF), Interior Aleutians Campus (IAC) by the National Science Foundation (NSF).

The four parts of the story:

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Who am I? .....	Page 4
Full Circle .....	Page 8
Putting It Together .....	Page 13

This booklet is more than an evaluation report, for the students it is a snapshot of an ongoing learning experience taken at this time in their lives.

We respectfully share this story.

Dear Reader, enjoy.







Zaz and Ida

IAC

# Looking Back

*There is a history of outside educators coming into Alaska and just completely cutting cultures off, teaching their way. If they blended [cultures] back then, we wouldn't have such a gap.*

**Gaalee'ya Student Alix Chartier**

We look to our elders for guidance to understand traditional ways of knowing. In this section, elders look back on how they grew up, and experienced early schooling. This section shares the elder's personal stories and sets a foundation to understand how the past shapes our current perspectives.

When the school system was first established in the Alaska territories, Native youth had to learn Western cultures. It presented a need for rapid adaptation and affected the practice of traditional ways. Today's students are faced with the challenge to balance *both sides* - traditional and Western.

*The elders are very important to the teaching because it always has been that all the education come from the elders. And it's good to have interaction with elders and students.*

**Elder Kenneth Frank**

## ON GROWING UP

The elders tell us it was their elders who taught them, now it is our turn to share the wisdom they have acquired from listening and learning and working hard throughout their lives. Learning in a traditional Native way is by doing and by working together.

*They didn't teach it [traditional ways] to us, we did it as we were growing up, as a family. Everybody up here [in Kotzebue region] did it that way, you all worked together as a family. You learned how to do things by working together.*

**Elder Lena Hanna**

The elders tell about their early years and why learning traditional ways is important:

*I was raised in a reindeer camp my first six years. My parents were nomadic with the reindeer herds. Other families were there too. I became an expert so it was my job to build a fire. The reason why I'm strong today is because my grandma. I'm not scared to venture out miles in through the woods to look for berries.*

**Elder Hannah Loon**

*In springtime we would catch our first fish out of the creek or the river and we'd let it sit over night. We never would eat it right there, that's to keep our tradition, to keep our luck. When the boys or the girls catch their first spruce chicken, they clean it and they give it to an elder.*

**Elder Madeline Williams**

# Looking Back



Flora Jane Harper, the first Athabascan woman graduate from Alaska Agricultural College and School of Mines in 1935 and the Interior Aleutians Campus (IAC) building named after her.

*Gaalee'ya, it's a luck that you get by learning to live right with the land and the animals, including people, and everything around you, to respect everything. It gives you the power to know the things that help you survive in a good way. You gotta protect this luck by respect. All these things are going to come back again, so you gotta listen and learn from the elders.*

**Elder Howard Luke**  
Founder of *Gaalee'ya* Spirit Camp

Our elders have carried on the traditional ways of knowing and stress the importance of hard work as an essential component of each day.

*When we were kids we had to work like men.*

**Elder George Albert**

The places elders lived and the foods they ate are two examples of then and now.

*A long time ago when were growing up we never lived in the village, we lived in camp, and we had to go out to get something to eat everyday.*

*We never ran to the store to buy hotdogs and sandwich, we didn't know nothing about that. If we stayed in camp we would have to catch rabbits everyday.*

**Elder Madeline Williams**

Elders recognize that moving from traditional ways brings with it a lack of physical activity as seen in our communities today and the accompanying health implications:

*It seems to me today that people are getting lazier and lazier. It seems like people just want it handed out today. People are getting obese because they aren't moving around as much as we did when we were young. We had to do everything by hand when I was growing up, get wood, get water, go pick berries, cut fish...there was always work to do but we were used to it and it had to be done. It was our everyday life.*

**Elder Lena Hann**

How you grow up and learn traditional ways of knowing helps to develop your spirit and share with the community as Elder Sam shares:

*That's the way it was... the way we lived. Nowadays it's called culture.*

**Elder  
George Albert**

***[The elders] have wisdom in their heads; there are dictionaries, encyclopedias in their heads.***

**Elder Hannah Loon**

*[Our elders] had in their cultural ways, terms for different phases we go through as human beings. Our parents, our family around us, help with those processes...you start realizing you are providing a Native way of how to do things. Your living a natural life that helps you provide a living, not only for yourself, but for your brothers, sisters, family, and your parents. As you do that, what starts growing inside you...your spirit. We nurture that spirit as we develop along our ways, our village ways, our cultural ways.*

### **ON EDUCATION**

Most of the elders who participated the *Gaalee'ya Project* went to school during the 50's and 60's. When interviewed, elders talked about their educational and the ways it shaped their lives.

*Culture was not even talked about back when I went through school. I had a rich cultural background from my mother and my family. Being Alaska Native, values and practices were not evident in the school at all and were actually frowned upon. When I said a Native word we would get our hands hit; it was difficult.*

**Elder Clara Anderson**

What our elders experienced when speaking their Native language significantly affected their school experience and had ripple effects on Native language use and acquisition still felt today.

*I didn't fully speak it [Inupiaq]. I understood it really well. I wasn't a fluent speaker. My parents used to speak to each other in Inupiaq all the time... but to us they spoke English. But I was around it all the time and when I was in grade school they made us stop talking it.*

**Elder Lena Hanna**

Change was rapid. Language loss was huge. For many of our elders, their experience with education was harrowing. While each experience is varied each elders story includes at least one comment on their education.

*School was very important to my family. There is a 10-year gap between my sister and I, and a 12-year gap with my brother. They were the 40's generation where schools in Alaska had just become integrated. In 1942, the territorial educational system made all children, Alaska Native or not, attend school together. That's profound, because before that Alaska Natives had to go to boarding schools or not go at all. My experience going to school is very different from theirs.ence. Not to say that schools were more welcoming...there were still a lot of issues, but I have a more positive view of education than my brother and sister do.*

**Elder Clara Anderson**

*Don't be intimidated by a large group, don't let them change you. Just be yourself.*

Elder Hannah Loon

Knowing oneself is essential to understanding the grander scheme of traditional ways. You cannot pass on collective traditions without knowing them yourself, where you come from, your people, and ways of living. For Alaska Natives, it is appropriate to listen and learn by our elders' experiences and stories. This section will share the elder's words on identity, language, and their views on education for youth.

## WHO AM I?

To understand Native ways of knowing, we must begin with understanding what it means to be Native.

*It's important for you to know that we are part of people, the Native people of this state and of this country. We call ourselves people. When you look at Inupiaq people, at Yupik people, when you interpret that name, it means people. So the first thing we understand is we are people, human beings. We don't have races. We have one race - human beings - and we all belong to a certain people where we come from.*

Elder Sam Demientieff

Elder Sam goes on to talk about learning who you are through your Native family lineage:

*A good thing for us to do is find out from your parents who you are and where they come from, the village and the people. Whether it Yupik, Eskimo, Athabaskan, Aleut, or whatever tribe you come from, seek it out, find out who you are. As you do that you'll start understanding more, developing a pride in your self. Writing the language, learn the customs and it will give you that same strength it gave to Kareem Abdul-Jabbar as he sought to find out who he is.*

Elder Sam Demientieff

To know your clan and Native name is fundamental to identity as an indigenous person. The following story of Alaska Natives who lack knowledge of their ancestral connection is an example of an effect on identity when heritage is unknown:

*I was getting calls in Portland because people found out I was an Alaska Native person from Alaska. They called asking if I looked at them would I be able to tell their heritage? They were Native people who had been adopted, or removed from their homes and had no idea what their heritage was, if they were Eskimo, Aleut, Athabaskan, they had no idea. Everything had been scrubbed out of them from being Alaska Native, they were supposed to be transformed into these all American people.*

*I would talk to them and say, "The fact that you know you're Alaska Native is good". I would talk to them about what a village looks like*

# Who Am I?



Arlo



Ryanne



Tillila



Rebecka



Katlyn

*and more or less tell them it's ok, asking about your heritage will help you to be connected to Alaska again.*

**Elder Clara Anderson**

We are social beings, as Alaska Natives we possess a strong history of successes through unity and togetherness. We feel a need to belong. A danger in not knowing who you are is the attraction to be somebody else:

*Things I have seen in young people are they want to be somebody else, they want to be somebody that they see on TV, a rapper. I'm not putting these people down, but young people they try to imitate those kinds of people. They talk like them and they listen to the kind of music they listen to. I think knowing more about Native ways will bring them back to who they are, to be proud of who they are instead of wanting to be somebody else.*

**Elder George Albert**

Drawing on Native ways of knowing enhances our ability to understand who we are and how we fit into the bigger picture.

*I think that knowing Native ways is vital to Native students, and for all of us to understand what they face in life. A lot of people say we live in two cultures, Western culture and Native culture, we do. It's important for you to remember the Native ways because they describe and will point to who you are. I get all wound up when I start talking about being a Native person and I'm very proud. One time I was not proud of being a Native person - an Athabascan elder - but I am now. I'm satisfied with who I am, and I'm proud of it.*

**Elder Sam Demientieff**

Elder Kenneth shares the result of knowing his culture and identity:

*I got very comfortable when I talk about my culture. It got me stronger, my self-esteem went up, my identity. I'm very happy to tell who I am, I'm not afraid to say things to people. Before that I used to be in an eggshell, afraid to say things but now I'm a very strong cultural person, and not afraid to say who I am.*



IAC

George

## LEARN YOUR INDIGENOUS LANGUAGE

Earlier in the Booklet, elders shared their experiences watching Native language slip from use. Because language and culture forms our identity, our elders encourage us to learn and use our own language. There is power when you can think in and communicate in our Native tongue.

*Talk in your language. When you learn the language you can describe many things in your life and experience more intimately, more precisely. Howard is trying to tell you that and I think it's true. Learn how to speak the language.*

**Elder Sam Demientieff**

In the process of discovering who we are, we will use many tools, and walk many paths. Our life lessons will come in many forms. Elder Clara tells a story of how combining modern education and ways of

doing things contributes to the process to retain and strengthen our language base:

*I think of Dr. Beth Leonard who is now the director of cross-cultural studies at UAF. She took her knowledge of [Deg Xit'an] – Athabascan and is researching that. She had to do it in a dual way, she had to learn a Western form of education and linguistics as she was learning her own language. In her region there are very few speakers left. She was fortunate to have her father as a fluent speaker and a couple aunts. As she was going through this process she would say how hard it was. Learning language had lost its value, the Ingalik way was gone. Now seeing what Beth has done and the way she's integrating both ways, it's a very heroic effort on her part and now she's able to teach it. But there are not that many Beth's yet...*

**Elder Clara Anderson**

Elder Hannah encourages students to learn their Native language – to begin anytime:

# Who Am I?

*It's important for you to remember the Native ways because they describe and will point to who you are.*

**Elder  
Sam Dementieff**

**Elders...  
make me  
want to  
stay in  
school and  
inspire me  
to make a  
difference  
for my  
community.**

**Ryanne  
Braselton**



**Kenneth**

*I don't know what this fear is all about, maybe because our parents, our teachers punished us before and we get scared to pass on [traditions] to our kids. That's why we're losing our language... but when you go hunting for sheep, you got to start writing the name for the sheep, for the conditions of the snow, and filling your book. **Elder Hannah Loon***

Elder Kenneth tells how to make connections to learn, to work with elders, to see and do, and to share with the community:

*Sometimes when students learn Native culture they are more happy in the school. If you do mainly Western science, with books, with a teacher, they are going to get bored. With Native culture you make it more fun. You see your ancestor, you look at it, you touch it, you make those connections. That's how our people used to learn....It is very important that we put the knowledge into the education so the younger people will utilize the resource among the community.*

**Elder Kenneth Frank**

The sentiment to use college education in the community is shared when Elder Hannah can see it herself:

*It's really important that I see with my own eyes that rural students can do these things in their homes, testing the soils, testing the water, and testing our foods.*

**Elder Hannah Loon**

Elder Howard encourages students to *see the both sides of it* – to learn tradition and mainstream education. He encourages students in both areas:

*I didn't go to school, but now I know both sides of it, and that's what I want our leaders to be. As a leader you got to know the both sides of it. My heart goes out for you young people, I want you to be something, for you to pass these things on. This was given to me, its up to me to give it to you young people. One day you will be sitting where I'm sitting and it will be your turn.*

**Elder Howard Luke**

The purpose of this Booklet is for students to share their voice and to demonstrate the impact of how the *Gaalee'ya Project* has influenced their *understanding of science in relation to traditional Native ways of knowing*.

This section comes full circle from the elders' stories to the students' awareness of *both sides*, modern and traditional, and how they can integrate and compliment each other. This is their story, shared in their words.

*One of the elders at our gathering told us it's cool to know about your culture. But you also need to go out and learn new things to be successful—that you need to be bi-cultural. It's important to know your balance.*

**Student Jessica Hildebrand**

*All these students, every one of you that said you are pursuing an education, we're proud of you. Elders are proud of you because you are trying to become a better person living in the two worlds that you, and we, are all living in.*

**Elder Sam Demientieff**

## A PARADIGM SHIFT

Slowly, especially notable since the Civil Rights movement, we have witnessed a shift in thinking experienced as a systems-wide change. This includes institutional recognition of the inherent benefits of traditional knowledge, and this change is noted by elders at the university level.

## CHANGES AT THE UNIVERSITY LEVEL

Elder and IAC Director Emeriti Clara Anderson credits the National Science Foundation (NSF) for funding the Gaalee'ya Project. Through Gaalee'ya, Elder Clara tells how space was created for students and elders to come together and acknowledge the validity and value in traditional ways of knowing:

*There are other ways of knowing and it's important to keep those flourishing. Give kudos to NSF for what they do. I find their work and their interest in minority education and support very admirable. On the other hand I also think it takes a long time to do this sort of work, even though they give the campus five years of funding, it takes longer.*

Both cultural knowledge bearers and institutions are at a point of realization that each can benefit greatly from sharing ways of thinking. The exchange of knowledge is beginning to happen.

We have a lot of dormant values that we just kind of leave on the shelf and we don't really put it into the education. But now we are taking them off the shelf and using them at the University level. It is a great thing that we are doing now.

**Elder Kenneth Frank**

While changes are underway...

*We are still a way from having the kind of leadership we [Alaska Natives] need to make transformative change, to merge*

Full Circle

## Core Alaska Native Values

Show respect for others

Share what you have

Know who you are

Accept what life brings

Have patience

Live carefully

Take care of others

Honor your elders

Pray for guidance

See connections

**Alaska Native  
Knowledge Network**



Elder Panel February 2013

*Alaska Native ways of knowing. That term, ways of knowing, was coined by Oscar Kawagley. He talked about how every culture has a higher thinking or way of knowing that is just as valid and important to respect and understand as the dominant cultures' way of knowing. That is fairly recent, Oscar got his PhD and there are a few Alaska Natives following after him.*

**Elder Clara Anderson**

*Gaalee'ya students represent the next generation of Alaska Native learners who seek university degrees. It is evident Gaalee'ya students draw strength from listening to elders speak, learning traditional Native ways, and value on all forms of education.*

*The elders shared stories about their experiences when they were younger and in a way I was able to compare my own experiences. It inspires me to succeed further in school knowing that I won't have to struggle as much as they did. I'm going to school to enhance my future and carry on the same traditions with new aspects.*

**Student Brett Kirk**

*Gaalee'ya students have gained an increased awareness of how traditional ways of teaching and learning are connected and that culture should be present in all aspects of education.*

*CHANGES FOR STUDENTS*

*Before Gaalee'ya I hadn't realized that [traditional] work is both mathematical and scientific. It was at Gaalee'ya camp that I meshed the two together, traditional with modern knowledge.*

*In school it was separated. Math is just math. Science is science. That's it - no blending of subjects. Modern education says, don't think that culture is part of it because it's not—it's separate. But, that's completely backwards.*

*If school incorporated culture, it would have been more relevant to my life. The Gaalee'ya STEM project really opened my eyes. Now I am a strong advocate for bringing culture into the classroom.*

**Student Marjorie Tahbone**

# Full Circle



Gaalee'ya students set net on the Tanana River by Howard's camp.

Traditional Native ways of knowing are universally beneficial to all, regardless of cultural background. Howard Luke exemplifies this notion of unity by sharing:

*My mother always told me, no matter who they are, black, or white, or yellow, you share with them and help them.*

Lessons on values such as respect and hard work benefit all students. The following two student quotes show that non-Native program participants gained insights on *both sides* and they too contribute to experience *both sides*:

*I think it is important to balance and accept as valid a variety of knowledge systems, whether indigenous or Western based. I think it is important to remember that the development of Western science came originally, way back when, from indigenous peoples.*

**Student Kimi Ross**

*Being involved in the Gaalee'ya program I have gained such respect for different viewpoints. Oral traditions passed down are used in wonderful ways to explain things without having to use a textbook...It shows me there are multiple viewpoints of looking at the same thing in science. Not that one is right and one is wrong, they are just different, applicable, and just as valid.* **Student Rebecka Paniwozik**

## LEARNING BOTH WAYS

Elders time and time again emphasize the importance of knowing *both sides*, that education in and outside of the classroom is essential to living a good life. They share their wisdom with hope that we learn and help the next generations.

*My grandpa would take care of us and make sure we had everything we needed for school. He would talk to us about how he didn't make it past the third grade. He always had jobs that were manual hard labor and for not a lot of money.*

*There's traditional science in practically everything that we do in our lives.*

**Elder  
Hannah  
Loon**

***In traditional knowledge nothing stands alone, there is no single discipline.***

**Stanley Edwin**

*He would always talk to us about working hard to get a better education and having a better life, without the struggle they had.*

**Student Tillila Beetus**

Through providing the opportunity for discussion and gathering with elders, the *Gaalee'ya Project* works to help Alaska Native students reintegrate traditional ways with modern education.

*There's traditional science in practically everything that we do in our lives.*

**Elder Hannah Loon**

The *Gaalee'ya STEM Project* presents opportunities for students to explore the connection between who they are as indigenous peoples and how this relates to and enhances their understanding of modern science.

*I think Native ways of knowing helps me to understand science because in a way I've always known what elders have told me, but never really understood that it was science until I got into high school and college. A lot of what they've told me is natural science. Native ways of knowing as it relates to science is practical.*

**Student Ryanne Braselton**

*Gaalee'ya* student Stanley realizes the future implications for science by implementing traditional ways of viewing the world:

*When I did my first internship, the reason I was picked is because my Native heritage gives me a point of view different than what regular science curriculums teach. In truth I use that ideal now in science courses more than anywhere else. In traditional ways of knowing we don't break things down and categorize them, we see the interconnection of things, and how things effect each other. In terms of mainstream science everyone studies disciplines that are separately categorized. In traditional knowledge, nothing stands alone; there is no single discipline.*

**Student Stanley Edwin**

Western science is enhanced when Native students are able to draw upon traditional tools for problem solving. Students who have been educated in indigenous ways of critical thinking are adaptive, a skill applicable in all facets of life as Elder Kenneth points out:

*Sometimes our Native education and background come out first because we have the knowledge to troubleshoot things, we are very good with that. With Western science they do things by the book.*

Many *Gaalee'ya* students have acquired skills through growing up and living in rural Alaska villages and are able to translate those lessons to the academic and work environment:

*In the villages you have got to be very resourceful in what you need... and this helps me in school. My end goal is to become an Engineer. My job now is working with local health corporations and I go out to the villages and work on water treatment plants. There's no parts store next to the water treatment plant that I can just go to pick up a part.*

**Student Arlo Bante**

In the *Gaalee'ya* Project, taking time to listen to the elders provided a balance of tradition to university science courses:

*Elders share another view on science that an instructor cannot. They also have a personal history, stories, and knowledge to offer.*

**Student Katlyn Zuray**

Mainstream scientists in many disciplines recognize that elders have observed our environments for generations and possess intimate knowledge that even the best mainstream methods cannot replicate. Seeking insights from elders adds to the process of scientific inquiry and investigation. NSF is an example of a government agency that acknowledges the importance of ancient wisdom, as seen throughout Alaska:

*Scientists want to learn about parts of Alaska, like why the salmon doesn't go down the river. But the scientists are kind of baffled and they usually go to the Native elders from that area that can explain why.*

**Student Gilbert Kennedy**

Many *Gaalee'ya* students are in a prime position to become both the scientific and traditional expert, taking their college knowledge, skills and methods forward to their community to progressively address their environmental concerns.

*The whole reason I came to college was because of my subsistence background. While fishing over the years I can see the decline in the salmon runs. I wanted to go to school so I could help work towards a sustainable salmon run, and work on the regulations.*

**Student Jessica Hildebrand**

The *Gaalee'ya* Program reinforces the students' realizations that tradition and mainstream skills, the *both sides*, are essential for the next generation:

*Teaching your kids how to hunt, traditional ways are important. You have to adapt and learn if you're going to be competitive in today's world.*

**Student Ramy Brooks**

If Alaska Native youth are taught to understand that science is already a part of their lives, it will encourage them to pursue the sciences at the university level.

*I've been doing science my whole life... A lot of Alaska Native youth have been living science their whole life yet students are scared to go to college for science. If they knew they'd been doing science their whole life they wouldn't be so afraid of it. It's just been part of our life.*

**Student Katlyn Zuray**

***When an elder speaks, I think it is important that we speak up to let them know we have heard what they said.***

**Arlo Bante**

# Full Circle

*We are the generation that is taking back what was lost.*

Marjorie Tahbone



Gaalee'ya students making drums.

This Booklet provides a space for *Gaalee'ya* students to demonstrate their knowledge of science as it relates to Native ways. Through the *Gaalee'ya Project*, understandings and powerful intergenerational connections continue to inspire student participants:

*Elders are always motivating you to keep learning and going to school and keep moving forward but they also want you to remember your culture, to listen to what your elders say and keep the tradition. You can learn science and it doesn't disprove your Native beliefs, they can work together and compliment each other. Elders... make me want to stay in school and inspire me to make a difference for my community.*

**Student Ryanne Braselton**

Elder Clara's vision to help Alaska Native students live in both worlds was cutting edge for mainstream science. To realize the complimentary nature of tradition and education is the backbone of the *Gaalee'ya STEM Project* and a realization of NSF:

*I never really thought about the two things joining together - my Alaska Native culture and education. That they could work together, that there was a place in education for culture. I thought they were separate when I was in my late teens. Someone in your generation today- you don't have to wait for that transformative moment. Culture and education work together much better now.*

**Elder Clara Anderson**



Brett and Dan Solie

# Putting It Together



Brett, Stan, and Amelia coding.

Over the past five project years, 2008-2013, Evaluation Research evaluated the *Gaalee'ya STEM Project*. During the first four years the evaluation aimed to strengthen the project and inform project faculty and staff. The final evaluation resulted in this Booklet, focused on the objective:

***Project students will demonstrate conceptual understanding of science in relation to traditional Native ways of knowing.***

While outcomes of this objective were discussed each year, and *Gaalee'ya* students were asked to document their understanding, this request only added more work to students busy schedules.

With the ERA student Team, the interview project was launched to document meeting this objective. Project students gave their time for interviews and attended the elder panel with interest. It was something they *wanted* to do instead of *had* to do.

## THE EVALUATION TEAM

Throughout the evaluation, a Team (*Team*) of Alaska Natives students enrolled at UAF, worked with mentor and ERA Principal, kas aruskevich. As the *Team* conducted interviews, evaluation project oversight and production was handled by kas. The evaluation *Team* members are:

Amelia Ruerup who led the student team of *Gaalee'ya STEM students*, Marjorie Tahbone, Stanley Edwin and Brett Kirk. James Johnson III, is one of the first Alaska Natives involved in evaluation. James interviewed elders and students in project years 1-3.

Marjorie, Stan, and Brett are *Gaalee'ya Project* students who have actively participated in the program. As such, they are uniquely qualified to provide insights and share understandings from a participant and researcher perspective.

This Booklet was a result of the efforts of many people. The evaluation *Team* thanks:

The elders and students who gave generously with their words and their time.

*Gaalee'ya* co-PI Dan Solie and project staff Misti Hopkins for their support, participation, and efforts to ensure this evaluation project was a success.

Thanks also go to the evaluation support provided in the early project years by Clara Anderson, Annette Freiburger, and Jennifer Carroll.

Photos in the report were taken by ERA staff or used through courtesy of IAC. Some students provided their own photos.

## THE EVALUATION PROCESS

The evaluation activities of the *Gaalee'ya Project* provided opportunities for the *Team* to learn qualitative research methods. These methods are very different from the quantitative research methods taught in STEM science courses. Using flexible qualitative methods provided the space to be influenced by each team members' Native ways of knowing.

The ability to describe and document the process is a key step in qualitative research and the purpose for this section.

To learn how to carry out evaluation activities, the *Team* met twice monthly. At these work sessions, the *Team* learned the purpose and use of asking for consent, protocols for working with Indigenous elders, interview techniques, and use of audio equipment - as all interviews were recorded and transcribed. Meetings also helped to coordinate evaluation activities - no easy task with four busy full-time students.

The *Team* interviewed elders who had participated in the *Gaalee'ya Project* and Amelia interviewed project students. During the last project year, interviews focused on the following question:

For elders: ***How do Native ways help students succeed in school?***

For students: ***How do traditional Native ways of knowing help you to understand and relate to science, or school in general?***

Next the *Team* learned qualitative analysis. They worked together to determine initial thematic codes for all interviews. Each student was responsible to analyze the interviews they conducted. Interviews from Years 1-4 were included in this process at the coding stage. Themes were then reduced to key themes that eventually became the four parts of this Booklet.

Most important to the process, it was the *Team* who chose the elder and student quotes. In this way the Booklet reflects the cultural and philosophical areas these Alaska Native students deem important.

Next, the quotes need connecting narrative - to *put it together* into a story. Amelia wrote most of the narrative, with edits by kas and Stan.

Lastly, for reciprocity and as part of the consent process, the *Team* presented the DRAFT Booklet to elders and students at the final gathering. This provided a chance for discussion and editing by participants. Many of the edits suggested were made to the DRAFT Booklet. One last review by the *Team* and the Booklet was finalized and disseminated to all participants, to NSF, and beyond so other students would have the opportunity to learn from it too.

## THE TEAM BIOGRAPHIES

Amelia Ruerup is Tlingit from Hoonah, Alaska. She holds a bachelor's degree in Justice and is currently seeking a Master's degree in Rural Development. Amelia has been working in evaluation for the past year and a half. In addition to Amelia's commitment to education and career development, she is professionally and personally committed to ongoing development of her traditional knowledge base.

Stanley G. Edwin is Dranjik Gwichyaa Gwich'in from both Chalkytsik and Ft Yukon of the Yukon Flats in Interior Alaska. Stan is an Applied Physics student at UAF and a 4-year participant in the *Gaalee'ya STEM Program*. Every summer since he became a *Gaalee'ya* student, he is an intern during the summer studying physics research techniques. Stan plans to graduate in Fall 2013, then attend graduate school. His favorite quote is: "Lead by example".

Marjorie Tahbone is Inupiaq from Nome, Alaska. She was a 4-year *Gaalee'ya* student and has earned her bachelor's degree in Alaska Native Studies with a minor in Inupiaq Language from UAF (2013). Marjorie currently works for Kawerak, Inc. in her hometown of Nome. Marjorie was Miss Indian World 2011-2012 and is an accomplished artist and fluent in her Inupiaq language. She hopes to become a cultural knowledge bearer and take part to keep her Inupiaq tradition strong.

Brett Kirk is Inupiaq from Noatak, Alaska. He is a sophomore majoring in Civil Engineering and a *Gaalee'a* student for the past two years. Brett is involved in the Alaska Native Science and Engineering Program, the American Indian Science and Engineering Society, and Natives for Positive Change. Brett is an avid hunter and actively participates in and embraces his Inupiaq culture.

James Johnson III is a Koyukon Athabascan from Fairbanks, Alaska. He holds a certificate in substance abuse counseling and just earned a BA in Sociology (2013), both from UAF. James has a genuine interest in substance abuse counseling but over the past few years he has developed a growing passion for program evaluation that extends the evaluator role. As an Indigenous person, James hopes through evaluation work, to make the world around him a better place.

Kas Aruskevich is an expert evaluator from Fairbanks, Alaska. A graduate of both UAF and UAA, she completed a PhD focused on Indigenous Evaluation in 2010 from the University of Hawai'i Manoa. Kas practices *Place-Based Evaluation* across the State according to the research-based principles learned from her doctoral studies and from 15 years of experience working with programs that serve Alaska Natives. As a non-indigenous Alaskan, Kas brings a wealth of knowledge and experience to work respectfully and effectively with indigenous communities and programs and shares her knowledge through mentoring Alaska Native students.



Amelia



Stanley



Marjorie



Brett



James



Kas

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Lena and Hannah



Sam

Contributing Elders

Howard Luke ~ Old Chena Village

George Albert ~ Ruby

Sam Demientieff ~ Holy Cross

Kenneth Frank ~ Venetie

Lena Hanna ~ Kotzebue

Hannah Loon ~ Selawik

Madeline Williams ~ Huslia

Clara Anderson ~ Rampart



Clara

Elder Participants

Vera Englishoe ~ Fort Yukon

Ida Ross ~ Kobuk

Elizabeth Fleagle ~ Alatna

Marie Yaska ~ Huslia

Not pictured



Madeline and Ida



Vera



Elizabeth



Evaluation Research Associates