

NEED

From start to finish of K – 12 schooling, Alaska Native (AN) students in Southeast Alaska are in peril. Drop-out statistics as well as performance on state assessments and the high stakes High School Graduation Qualifying Exam all reveal they are in peril. Additionally, the number of Native students in supplemental programs, Native student attendance data, and listings in behavior incident reports likewise signal Native students are not doing as well as their non-Native peers. The graduation rate for Alaska Natives was 50% in 2011 while the drop-out rate is routinely double that of non-Native peers. In this project SHI commits to addressing one of the most blatant among the many needs of Native students – to increase their performance in Math. Success in math, more than any other subject, is absolutely crucial to academic success. Math is “the gatekeeper” in the pathway to college.

Alaska Native middle school students from four rural Southeast districts and Juneau’s two middle schools were selected because of their persistently low performance on the Alaska Standards Based Assessment in math, at a time when math becomes the glaring gatekeeper for academic success in high school. Recent results of testing show that middle school students in these five districts are far behind their non-Native peers, *with less than 50% scoring Proficient on the 2011 SBA math test*. A total of **269 middle school students** in six schools, along with their math teachers, are the primary audience for this project.

Chart #1 % Native Students Scoring BELOW PROFICIENT in Math – 2011SBA

Grade	Chatham - Angoon	Chatham- *Klukwan only	Hoonah	*Hydaburg	Juneau
6	75%	NA	62%	NA	44% of AN students are Not Proficient, compared to only 10% Not Prof who are non- AN
7	58	NA	73	NA	
8	50	NA	57	NA	

*Due to the small size of middle school classes data is Not Available publicly for Klukwan or Hydaburg.

All but Juneau were districts in “Alert Status or Corrective Action Status” with the Alaska Department of Education in 2011, due to persistent low performance. Anecdotal data gathered by SHI attested to similar, alarming concerns regarding the lack of AN student success, and led SHI to design this particular project, with these particular districts.

Recent enactment of the Governor’s Performance Scholarship requires that students must soon take, and *pass*, four years of math in high school to be eligible to receive **full** college funding which the Governor’s scholarships provide. In order to take Calculus in high school – the course which equips them with college level math skills - they *must* take Algebra in 8th grade. If Native students continue the recent ten year trend of performance, they will not be equipped or eligible for advanced high school math classes and as a consequence for the Governor’s scholarships. The worrisome threat on the horizon is that yet another generation of Native students will be excluded from a college education because they do not have the resources to pay for it without scholarships. The Governor’s scholarship initiative intensifies even more the need for a solid math education in middle school so that Native students are ready for both high school and then college.

Anecdotal information from math teachers across the region, combined with longitudinal test data across the grades give undeniable evidence that we lose many Native students in middle school. In a nutshell, their interest wanes, their motivation to do well slumps and then it is too late to catch up in a subject so sequenced that staying on top of current knowledge is paramount. Many believe that future high school drop outs can be accurately predicted by the end of 6th grade. This belief yields another compelling argument for addressing the need to improve interest, motivation and academic performance in math during middle school, before they decide to leave school completely.

Many Alaska Native adults in Southeast will tell you that they—and now their children and grandchildren —have been at risk of failure for a long time. It is they who have been “left behind” if you consider a decade of testing data. Engrained in the Native culture is a deep respect and value for education, yet many Native students struggle daily in schools where social changes have forced cultural and linguistic assimilation. Given this scenario, education appears to many as a false promise, and the lack of many successful role models undermines student motivation—they see too many graduates and parents unable to apply their education to local situations and culture. SHI realizes that successful programs in this region build on one another through the years, and must reach out to the Native community and Elders for their support of young people. In traditional ways, by giving input and advice along with sharing their knowledge, they help to develop a sustainable system of increased educational opportunities for Native students.

This project will marshal cultural resources designed to supplement routine math instruction, increase student interest and motivation in math through culture based summer camp experiences rooted in geometry and algebra content and skills, and engage AN students in supplemental “Math Works” classes. As *the* regional non-profit tribal organization, SHI has the strongest network of Elders, culture bearers and tribal leaders to rely on for assistance with this project; SHI is best suited to spearhead this project in partnership with districts and the University of Alaska Southeast.

PROJECT DESIGN

The overall project goal is to increase the percentage of AN middle school students scoring Proficient on Alaska Standards Based Math Assessment (SBA) by 5 % in each district, and increase their interest in Math, as indicated on attitude surveys and interviews, over the three

year period. To achieve this primary goal, three specific project Goals and aligned Objectives were carefully crafted by SHI and partners, Elders, university faculty and math teachers.

Goal #1: Actively engage 50 students/year in experiential, culture based math intensive camps

1.1. Develop and deliver two-week, intensive, academic and cultural camps and Winter Break mini camps, modeling traditional subsistence and art forms integrated with middle school math content/skills in Geometry and Algebra.

1.2. Conduct pre and post assessments with campers and report results to school administrators, teachers and parents.

1.3. Recruit and support PITAAS education students from UAS to serve as camp assistants/apprentice teachers.

Goal #2: Increase knowledge of 14 teachers/year in Tlingit/Haida cultural traditions, protocols and art as they affect mathematical learning

2.1. Recruit and support 14 middle school teachers to attend SHI Northwest Coast Arts Institute, and add sessions integrating math content with formline design and basketry.

2.2. Provide opportunities for up to 14 middle school teachers to participate in Math in a Basket, Canoes Upon Our Waters, NCTM national conference, other relevant program training.

2.3. Conduct pre-post teacher surveys and interviews to assess knowledge gained and application to what/how they teach math.

Goal #3: Produce, field test and disseminate series of supplemental math resources reflecting Tlingit/Haida culture for beginning Algebra and Geometry courses.

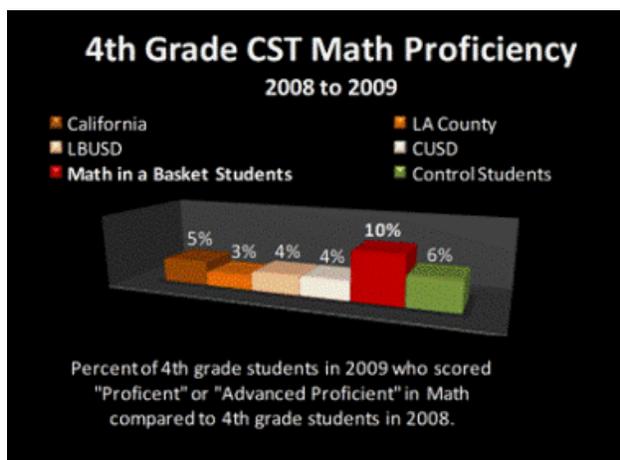
3.1. Design and develop culturally respectful supplemental math lessons suited to Tlingit traditional ways.

3.2 Field test culturally based math resources in intensified math classes in Juneau.

3.3. Produce and disseminate series of culture based math resources to supplement middle school Algebra and Geometry course content and reflect diverse learning styles.

Program components that will enable us to meet the Goals and Objectives described below.

1. Math in a Basket Program After a careful review of supplemental math projects suited to a diverse audience of students, designers determined that Math in a Basket is an excellent model to adapt for this project. This program, conceived twenty years ago in Long Beach, the most diverse district in California, aimed to increase math performance of upper elementary students through a highly motivational and interesting art project – making baskets. *Students in Dramatic Results' Math in a Basket (MIAB) program have the opportunity to plan, design, and make actual baskets from scratch. Students master skills in measurement, algebraic formulas and geometric concepts as they work with their basketry dimensions to find the surface area, perimeter, and volume of each basket. Students also work directly with traditional artists to learn the ceremonial and functional history of basketry. Tlingit people have been master basket makers and weavers for hundreds of years, so MIAB echoes the cultural traditions of the indigenous people of Southeast Alaska (hereafter Southeast). It also presents math in an innovative way and produces results as shown in the chart below.*



*“The students just love it... their energy level goes up, their attention span increases, it’s very, very exciting! I told my principal that the struggling students were finding **success** here. Much of what we do is preparing the students for standardized tests. Math in a Basket is the only fun thing the students get to look forward to.”*

Three project teachers will be trained in the MIAB curriculum and then draft adaptations to reflect Southeast middle school students and math curricula. One MIAB staff will participate in Year One's summer camp, teaming with project teachers to teach students basket making as it was traditionally done in Southeast, and give feedback to project teachers on the adapted curriculum. Pre and post student surveys of project students will record progress in mathematical knowledge and understanding. Assessment results will be compared to on-going MIAB data collection, thereby contributing to the longitudinal research on how culture rich materials can produce results in Western math testing. In addition, the MIAB battery of attitude scales will be adapted by the *Opening the Gate: Southeast Middle School Math and Culture Project*, to collect information that will help us better understand the math challenges and motivations of Native students in our region. *"Analysis indicated that students in the MIAB treatment group were rated significantly higher on all social indicators relative to the control group. According to their teachers, students in the treatment group were better able to resolve problems with their peers on their own (communication skills), express needs and feelings appropriately (emotional regulation), and function well even with distractions (academic skills)"*

At the end of the grant period the Southeast version of MIAB will be shared with all Southeast districts, the Alaska Department of Education and Early Development and AK Math Consortium.

2. Canoes Upon Our Waters The second national program researched by the project team comes from our neighbors to the South, also people of the Northwest Coast. Called **Canoes Upon Our Waters**, it features math as used in another traditional form for which Southeast Native peoples are known. In this curriculum, developed in the Puget Sound area by former Alaskans, *students come to understand the awesome responsibility of a carver and his apprentices, to create canoes that cradle the safety of people. Just as the carver understands the*

importance of measurement, symmetry, balance and continual assessment, students focus on these processes as they carve model canoes. The standards-based Math content developed in this unit include:

- Identify, describe, or draw objects in the surrounding environment in geometric terms - for example, producing a simple scale drawing of a class canoe in our environment
- Understand symmetry, congruence, and similarity
- Identify and describe location of objects on coordinate grids in any of the four quadrants.

After careful observations of a master carver, students measure and carve a model canoe. Final products of this project include a canoe carved of balsa foam with (1) narrative about the experience of carving (focus on personal experience); (2) timeline of the process of how they are carved (focuses on process); and (3) description of the mathematics used in carving the canoe, including the direct relationship to school math (focuses on the relationship between canoe carver's traditional mathematics and school math)

The Canoes Upon Our Water curriculum will be adapted for use with Southeast middle school students, extended up from its original audience of 4-6th grade students. In Year One, 2 – 4 project teachers will participate in a Canoes teacher institute near Seattle and draft curricular adaptations that reflect Southeast Native cultures, use of canoes and carving techniques. The canoes curriculum will be used side by side with the basketry curriculum during summer math camps. The Canoe program Director will help plan and co-lead camp sessions. Further curriculum revisions will be done in Years Two and Three, resulting in the creation of new supplemental math resources to be shared by SHI will all Southeast districts, the DEED, tribal leaders and the Alaska Math Consortium.

3. Intensive Academic and Culture Camp An intensive, two week summer camp for up to 50 middle school students from the six schools will be a project hallmark. The Juneau District will collaborate with SHI (the District already has a working partnership through an established Memorandum of Agreement with SHI) to co-host these summer academic intensives. Sealaska will focus on the development and delivery of place-based mathematics via cultural topics – basketry and canoes; the District will assist with hiring and contracting with certified teachers, and the location logistics.

The daily schedule will start with a series of leadership skill building sessions, where students learn more about how to be both a leader and a positive group member, how to communicate effectively and how to solve problems in a group. This will be followed by hands-on math projects whereby they use math skills to make baskets using the traditional techniques of Tlingit and Haida weavers. The adapted MIAB curriculum will be the guide for these sessions. A field trip to the Alaska State Museum to view cultural treasures and artifacts, with stories and comments about their history and use from Native Elders and Clan Leaders will complement what they are learning about baskets and weaving.

During lunchtime, students will watch select film clips and DVDs from the SHI library that feature interviews with weavers and carvers and canoe building. The focus of afternoon sessions will be on the math skills used in the design, construction and navigation of traditional canoes. Students will interact with noted Tlingit carvers to design and build a model canoe. They will reflect in writing on the process, test their canoes in water and evaluate their work as well as that of peers. A field trip to a local lake to experience paddling a traditional Tlingit canoe will be a highlight, thanks to a partnership with the Southeast Alaska Regional Health Consortium, whose traditional style canoes are used in wellness programs.

Throughout the two weeks students will keep daily math journals, to be shared with parents and, at the start of school, with teachers. Pre and post assessments will document student learning of math skills.

4. Middle School Math and Culture Class Dzantik'i Heeni Middle School (DZMS) in Juneau houses its 460 students in three houses, each of which is staffed by teams of highly qualified teachers and some assistants. 22% or 101 students are Alaska Native. Floyd Dryden Middle School (FDMS) has a population of 563, with 98 Native students. Following the summer math and culture camp experience, each school will provide a "Math Works" class for 10 – 12 students not yet proficient on the math SBA. This specialized one hour/day class will be in addition to their "regular math class". Instruction will include time with a computer based program, "Study Island" whereby a teacher can individualize math practice for each student, and get immediate feedback on their progress. The Study Island SBA Program is specifically designed to help students master the content specified in the Alaska Performance Standards/Grade Level Expectations, and enables students to improve their performance in math as tested on the SBA. The user-friendly interface allows students to move through the program step-by-step. Each section has topics that cover each of the Standards/Grade Level Expectations and a pre-test and a post-test. Topics consist of questions, answers, explanations, and lessons that address specific required skills. Coaching and practice on test taking skills, and on the reading skills needed to solve word problems will also be a component of Math Works. The rest of the period will be taken up with project based learning, using some of the emerging adapted cultural math units, along with some previously developed SHI cultural curriculum and some of the middle school Math in a Cultural Context units, created through a another ANEP grant. (They include Kayak (*statistics*), Star Navigation (*angles and measuring*), Salmon Fishing

(*probability*), and Smokehouse (3-D geometry). Five Juneau teachers were previously trained in the MCC curriculum; they have not fully implemented those units largely due to a lack of time. Three-four Native PITAAS students from UAS who are working on becoming secondary teachers will work as assistants in the Math Works classes and will receive credit for doing so.

With a small class size, highly trained and committed math teachers, individualized attention to “filling the gaps” in mathematical knowledge, and an overall focus on having students make sense and make meaning of math, test scores will improve and there will be an increase in the percentage of AN students scoring Proficient on SBA math tests. Juneau teachers will regularly share, via a project WiKi site, what they are using and learning with colleagues in the other sites, who typically have math classes about the same small class size. In Years Two and Three, teachers in the six schools will change math instruction to incorporate documented best practices growing out of project activities.

5. Winter Break Cultural Math Intensives To continue the thread of math and culture started in summer, and nurture the community of students who attend the summer sessions, a Winter Break Intensive will be offered in each community. Project designers learned that for many Native students who may not be athletes the 5 – 10 day Winter Break is indeed a break, with “not much going on” and the possibility of engagement in non-productive activities. Weaving and canoes will remain the theme/topic of 3-day “mini camp” sessions. Local weavers and carvers, identified and invited by SHI, will be contracted to teach new techniques to students. For example, students will paint formline designs they draft with an artist/coach onto canoe paddles. Or they will weave simple baskets using local grasses, with advice and modeling by local women weavers. Math journals similar to those used in summer will be the vehicle for recording in words and drawings what is learned. iMovies may also be made of these interactions among

students and local experts/artists. Project math teachers will be invited to team with artists in these sessions.

6. Professional Development for Middle School Math Teachers Middle school math teachers from the six project schools will receive professional development in best practices in middle school math instruction, how to implement the MIAB and CANOES curricula and hands-on experiences in cultural protocols, subsistence practices and art forms of Tlingit people.

At the start of the three-year project, target teachers will come to Juneau (or connect via Skype) for a hands-on Math Retreat to learn about project goals and objectives and be introduced to the math methods embedded in the MIAB and CANOES curricula. They will be invited to register for a one-credit curriculum development course through project partner UAS, so that, as the team begins adaptations and extensions of the curricula, teachers contribute additional math activities. An online communications network- a WiKi- will be set up at this time to enable on-going connections and information sharing throughout the three year project. Each year, 2 -3 math teachers will attend the National Council of Teachers of Math (NCTM) conference. Afterward they will share online what they learned with colleagues, and produce in writing a summary of best sessions, best resources and best practices observed.

In addition, each year 2 teachers will attend a MIAB training and observe teachers in action teaching that curriculum. A specialized CANOES training with the Director of the project and former Southeast resident will be provided in Year One, so that math teachers from each school fully understand the intent and impact of the curriculum, and how it was implemented in the Seattle area.

Another professional development component of the project involves a new SHI initiative, funded through diverse sources. The five day *Jineit* summer Academy will engage

teachers in Southeast in learning about formline design, the signature art form of this region. It is used in all totem poles, regalia, Chilkat blankets and carved masks. The *Opening the Gate: Southeast Middle School Math and Culture Project* designers carefully planned to maximize the cultural resources of SHI by bringing components of the Jineit and Math projects together. In Year One, math teachers from target schools will join other colleagues in Juneau to collaborate with local master artists on Northwest Coast arts. In addition to the five-day Jineit Academy, project teachers will spend two extra days, melding math content and expectations with formline design and history. Teachers will develop lessons that integrate math with the visual arts to be added to emerging Sealaska art kits. One or more of these art kits will feature baskets that include use of formline designs. Teachers will ensure that math content reflecting Alaska Standards is front and center of these specialized kits. The kits will then be among the culture based supplemental math resources made available through this project. The same professional development will occur in Years Two and Three, with UAS graduate credit available.

Using funding from another grant, SHI will then sponsor teacher training throughout the region during Years Two and Three to introduce and train teachers in the availability and use of the art and math kits. This increase in the number of teachers - and through them students - familiar with formline design will help lay the groundwork for revitalization of the traditional style of master/apprentice learning process in a modern context, and show how math is a key feature of all formline design.

Project addresses Needs of Target Students: Unless a significantly greater percentage of Alaska Native students achieve high school graduation, Alaska's indigenous people will not be equipped to overcome impoverished social and economic conditions they endure. "*Native incomes on average remain just over half those of other Alaskans, and Natives are still about a*

third less likely to have jobs. Native households are three times more likely to be poor; poverty is especially high among households headed by women. These economic problems are all worse for Natives in remote rural villages.”¹

A social profile of Southeast Alaska Natives shows Native students contending with family issues such as 40-50% unemployment rates, poverty affecting 23%, substance abuse affecting hundreds of families and a teen pregnancy rate comparable to third world countries. In the 2010 census, 29.2% of the adult Native population living in Southeast Alaska had not received a high school diploma, or had less than a 9th grade education. Given the backdrop of inter-generational poverty coupled with a history of less than positive experiences with Western schooling, it is no wonder that many families do not have the skills or the passion for ensuring their students are high achievers.

MANAGEMENT PLAN

The Management Plan outlines activities, persons responsible, deadlines and anticipated outcomes that will ensure the Project meets its stated goals. To successfully implement Management Plan activities with fidelity and on schedule, the following Key Project Staff will lead the Project. SHI team members are Alaska Natives who grew up in the region and have the cultural and administrative experience to ensure success. (See Attachments for full resumes) Principal Investigator (Dr. Rosita Worl .10 FTE) will oversee the project, act as liaison to the Council of Traditional Scholars and tribal leaders statewide, and present emerging data/findings; Project Director (Linda Belarde .75 FTE) will supervise all activities, staff and implementation of the Management Plan.

¹ *Status of Alaska Natives 2004*, Institute of Social and Economic Research, University of Alaska-Fairbanks, May 2004, p. 17.

Project Assistant (TBD .50 FTE) will manage logistical support, communications, summer camp recruitment, enrollment and daily assistance, and materials purchasing and dissemination.

Publications & Media Director (Kathy Dye, .25 FTE) will work with Project Team to produce math lessons/activities and share online.

Camp Leaders/Curriculum Developers (3 @ 35 days/year) Juneau teachers Shgen George, Hans Chester and one middle school teacher will adapt canoes and weaving curriculum materials for middle school level, plan and lead summer camp activities, and participate in Project Team meetings.

Program Consultants (12 days/year) Key staff from the BIAB and Canoes programs will consult on curriculum adaptations, provide teacher training, co-lead portions of summer camp,

Elders/Culture Bearers (contracted for a total of 15 days/year), including members of the SHI Council of Traditional Scholars will advise the key staff throughout the project;

Project Evaluator (TBD; contracted, 50 days/year) will be responsible for implementing the comprehensive Evaluation Plan, active participation in Project Team planning and all evaluative reporting to various stakeholders.

Objective 1.1. Implement two week intensive academic and cultural Summer Camp and 3 day Mid-Winter camp			
OUTCOME: 50 Native students/year participate in summer, winter camps and demonstrate growth in math skills			
Activities	Timeline	Person Responsible	Milestones
1. Design, draft 2 week camp and 3 day camp agendas	Fall, each year	Director, Project Teachers, Elder input	2 week math and cultural arts intensive camp and 3 day “mini camp” agendas, schedules, staffing set, revised in Yr. 2 and 3 based on Year 1. Students from 6 schools enrolled, complete sessions. Camps conducted as planned.
2. Recruit, contract teachers, Elders; order supplies	By Jan, ea. yr. Order: April 1		
3. Recruit, select students	By April 15	Director, Principals	
4. Implement camp in summer, winter	Each June, December 2 wks. (June) - 3 days	Director, Teachers Teachers, Elders	
Objective 1.2. Conduct pre and post assessments with summer campers.			
OUTCOME: Assessment results are compiled and shared with all stakeholders			
Activities	Timeline	Person Responsible	Milestones
1. Conduct pre-test; math skills, culture	2 weeks before summer camp	Director, Admin. Asst. Director, Evaluator	Test data summarized All data analyzed, report produced, shared
2. Collect, summarize evals	End of camp		

Objective 1.3. PITAAS students from UAS to serve camp assistants/apprentice teachers.			
OUTCOME: 3 - 4 PITAAS students act as assistants and gain university credit			
Activities	Timeline	Person Responsible	Milestones
1. Advertise, recruit, select UAS PITAAS student assistants	Jan., each yr.	Director, UAS PITAAS Director	3- 4 PITAAS students contracted as camp assts, complete requirements to receive credit, complete evaluations, documentation
2. Include Assts. in planning	Winter, spring	Camp teachers, Director Assts.	
3. Assts. participate in camps	Summer, Mid Winter		
Objective 2.1. 14 middle school teachers attend Northwest Coast Arts institute, develop additional math centered lessons			
OUTCOME: Teachers demonstrate increased knowledge, skills in NW Coast art, adapt materials for middle school instruction			
Activities	Timeline	Person Responsible	Milestones
1. Advertise, recruit, enroll teachers	Winter	Director, SHI staff, Admin. Asst.	14 teachers enrolled in institute, fully participate, evaluate session, create set of math lessons that feature formline designs
2. Implement 5 day NW Coast institute	Late May	Project Teachers	

Activities	Timeline	Person Responsible	Milestones
1. Project team adapt MIAB, Canoes, MCC lessons to reflect SE cultures, middle school grades	Throughout, ongoing	Director, contracted teachers, media director	Series of culturally based math lessons/activities produced, shared online, on WiKi and in person
Objective 3.2. Field test culturally based math resources in an intensified math class in two Juneau middle schools			
OUTCOME: Math and culture class- Math Works- implemented, refined, instructional strategies shared			
Activities	Timeline	Person Responsible	Milestones
1. Develop schedule, content of class	Late summer, ea. yr.	Director, 3 target teachers	Class curriculum set, AN students in need recruited./enrolled, class implemented, monthly reviews of progress, changes needed. Collect test data, compare to other groups, previous years test data
2. Recruit AN students for class	Yr. 1- early fall, Yr. 2-3-spring	Principal, teachers	
3. Implement Math Works	Each year	Teachers	
4. Evaluate impacts, test performance	Spring	Teachers, Evaluator	
Objective 3.3. Produce and disseminate series of supplemental, culture based math resources			
OUTCOME: Middle school Algebra & Geometry course materials augmented by cultural activities and lessons			

Activities	Timeline	Person Responsible	Milestones
1. Draft new math lessons based on class projects	Throughout, each year	Teachers, Admin Asst.	Series of supplemental math lessons, activities produced online, printed, shared

(ii) Feedback and Continuous Improvement Process

The Project Design includes monthly meetings with Key Project Team members, led by the Director, and bi-weekly discussions between the Director and Evaluator, to keep project activities in smooth motion and aligned with objectives and outcomes. An external *Advisory Team*, composed of Principal Investigator Worl, Project Director Belarde, UAS Dean of Education Lo, two Southeast superintendents and an Elder from the Council of Traditional Scholars will meet bi-annually, in person or via technology, to review progress and suggest improvements as necessary. Annual interactive reports will be made to the Council of Traditional Scholars and SHI Board of Directors, along with target school boards. During these sessions, input will be sought to continuously improve project activities and better meet district needs in terms of student motivation and achievement in math. Regular updates on the SHI website will include on-going evaluative feedback on project activities. The Evaluation Plan below reiterates the focus on regular feedback, reflection and improvement.

ADEQUACY OF RESOURCES

Sealaska Heritage Institute (SHI) is a 501(c) (3) nonprofit entity and is governed by an all-Alaska Native board of Trustees, each of whom is a member of a Federally recognized tribe in our region. SHI is a leader in perpetuating the vibrant cultures of the Tlingit, Haida and Tsimshian people. For the past thirty (30) years, SHI implemented programs to encourage Native education, culture, language and arts region-wide. In 2004, SHI received the Governor's Humanities Distinguished Cultural Service Award in Alaska. SHI's annual operating budget is over [REDACTED]. SHI receives grant awards from federal, state and local governments, private foundations, support from the Sealaska Corporation, and contributions from businesses and

individuals. The Finance Department presents monthly reports to the President and Chief of Operations, quarterly reports to the Board of Trustees and annual reports to Sealaska's Board of Directors as well as undergoes an annual OMB A-122 audit. SHI's offices in downtown Juneau will be the central location for the Project. SHI will donate office space, Xeroxing and phone services and computers to serve project staff in Juneau.

PROJECT EVALUATION

(i) Thorough, Feasible and Appropriate Methods of Evaluation

The design and methodology of the project evaluation will ensure that a variety of measures, aligned to project Goals and Objectives will yield significant results, evidence and lessons learned, to pass on to our stakeholders and other regions, districts and tribes. Process evaluation questions to be addressed include such things as *How were national curricula revised to reflect the cultures of Southeast? Did target teachers integrate more cultural, place based experiences in math classes? What evidence do we have of increased student interest and engagement in math?* Evaluation methods align with project outcomes in a way that is as unobtrusive to implementers as possible, and make use of student assessment data, student and teacher surveys, student journal entries, focus groups, structured interviews, cultural learning forms, observations, conference reports, meeting minutes and reviews of anecdotal and structured data and student/school/district records. The Evaluator will ensure that all federal reports are produced in a timely fashion, as per deadlines, as well as reporting emerging data/information in a variety of formats suited to stakeholder audiences.

(ii) Objective Performance Measures, Qualitative and Quantitative Data

The evaluation design, performed by an external evaluator, will utilize a triangulated approach to access both qualitative and quantitative data sources, in order to formatively assess

the effectiveness of objectives and activities as they contribute toward or deter from the realization of each goal, and summatively to assess the qualitative and quantitative extent to which each of the three goals has been met.

The formative evaluation will examine the Project's implementation and administration. It serves a management monitoring function as well as program development “shaping” function, by providing the project team and partners with ongoing feedback addressing activities corresponding to objectives. The external Evaluator will meet quarterly with the project team. He/she will collect qualitative data by conducting interviews and participatory focus group discussions with target teachers and school administrators designed to identify emerging problems, and through observations of summer/winter camps. Subsequently, she/he will recommend adjustments to objectives and corresponding activities, in order to ensure project success. The formative component will help shape or modify various activities as necessary, in a timely manner. It also serves to help explain summative outcomes, i.e., the extent to which the program goals are met over the course of the grant period.

Quantitative data to be routinely collected and analyzed using instruments/tools such as attendance/participation logs, SBA math test data, by grade and school, student pre-post camp surveys to measure changes in student attitudes toward math, teacher rating scales to measure degree to which teachers are confident in teaching math with cultural components, classroom observation protocols to consider fidelity of implementation, and MIAB and Canoes surveys adapted to suit Southeast environment and culture to analyze program impact. The Evaluator will be responsible for working with the project team to develop and administer all evaluation tools. The three year evaluation design will be further amplified in Month One of the project.

At the end of Year Three, a summative evaluation of the project addresses its effectiveness in terms of each goal and objective, answering essential questions aligned with Project Goals: 1) *Were 50 middle school students engaged in annual intensive summer camps and what did they learn?* 2) *To what extent was the knowledge of 14 teachers/year increased, in terms Tlingit/Haida cultural traditions, protocols and art as they affect mathematical learning?* 3) *Did the project produce and disseminate supplemental culture based materials for middle school math classes?* 4) *Did test scores indicate a positive impact on Native middle school students?*