

Supplemental Material

CBE—Life Sciences Education

?Yff *et al.*

Supplemental Materials

Recognizing and reducing barriers to science and math education and STEM careers for Native Hawaiians and Pacific Islanders

CBE-Live Sciences Education (2018)

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Supplemental Materials Part A

Statistics on the minority status of Native Hawaiians and Pacific Islanders.

The White House Initiative on Asian Americans and Pacific Islanders provides statistics (<https://www2.ed.gov/about/inits/list/asian-americans-initiative/what-you-should-know.pdf>) revealing the following points (Tran et al., 2010):

- Almost 20% of Native Hawaiians and Pacific Islanders live in poverty (U.S. average living below poverty: 12%) and over 16% lack health coverage.
- Pacific Islanders have a per capita income 27% below the national average.
- 15% of Native Hawaiians and other Pacific Islanders hold at least a bachelor's degree compared to 28% for the entire population; 5% hold a graduate or professional degree compared to 10% of the entire population.
- Pacific Islanders are half as likely to have a bachelor's degree in comparison with 27% for the total population and 49% of the Asian American population.
- Only 29% of Pacific Islanders between the ages of 18 and 24 are enrolled in a college or university, which is comparable to African Americans. In contrast, 39% of non-Hispanic whites and 57% of Asians in the age range are enrolled in college.
- Research has found that Asian Americans and Pacific Islanders (AAPI) with higher socio-economic status (SES) were three times more likely to begin college at a selective institution than those in lower SES, with Southeast Asian and Pacific Islanders less likely than Chinese, Japanese, and Koreans to begin college at a selective institution.
- The importance of disaggregation of data within the AAPI community can be seen in bachelor-degree attainment rates among ethnic subgroups from a high of 69.2% for Asian Indians to a low of 9.4% for Samoans.
- A recent analysis by the State of Hawai'i revealed for non-Hawaiian Pacific Islanders (Chamorro, Marshallese, Samoan) living in Hawai'i, per capita incomes range from 30 – 80% below the average for the entire population of the state (files.hawaii.gov/dbedt/economic/reports/SelectedRacesCharacteristics_HawaiiReport.pdf).

Supplemental Materials Part B

Participants in the workshop

Pacific Islands

- *Camacho, Frank, Associate Professor, Biology, University of Guam (Chamorro)
- Hess, Donald, former Professor and Vice President, College of the Marshall Islands
- *Kerr, Jonita, Associate Professor, Biology, Guam Community College (Chamorro)
- *Macduff, Sean, graduate student, Saipan, CNMI (Chamorro)
- Miller, Ross, LSAMP Coordinator, University of Guam
- *Ngirmeriil, Sherry, Instructor, Biology, Palau Community College (Palauan)
- *†Pelep, Peltin, Instructor, Biology, College of Micronesia (Micronesian)
- *Sunga, Anthony Jay, Associate Professor, Biology, Guam Community College (Guamanian)
- *Savu, Vasemaca, Instructor, Education, College of the Marshall Islands (Fijian)
- *Tagarino, Alden, Instructor, Biology, American Samoa Community College (Filipino)
- *Yuzi, Vernice, Instructor, Biology, Palau Community College (Palauan)

Hawai‘i

- *†Cockett, Patricia, Ph.D. candidate, Texas A & M University (Native Hawaiian.)
- Grabowsky, Gail, Associate Professor, Environmental Studies, Chaminade University
- Hadfield, Michael G., Professor, Biology, University of Hawai‘i at Mānoa
- *Hosoda, Kelsea – Minority Program Coordinator, College of Engineering, University of Hawai‘i at Mānoa (Native Hawaiian)
- *Kaakua, Joshua, STEM Diversity Specialist, Office of STEM coordination, University of Hawai‘i at Mānoa (Native Hawaiian)
- *Kanahele-Mossman, Huihui, Associate Director, Kipuka Native Hawaiian Students Services, University of Hawai‘i at Hilo (Native Hawaiian)
- *†Kimokeo, Bethany, Instructor, Kamehameha Schools, Honolulu, HI (Native Hawaiian)
- Manning, Makenzie, Associate Professor, Biology, Kapiolani Community College, Honolulu
- Marker, Nancy, Program Evaluator, Social Science Research Institute, University of Hawai‘i at Mānoa
- McFall-Ngai, Margaret, Director, Pacific Biosciences Research Center, University of Hawai‘i at Mānoa
- Richmond, Robert, Research Professor, Kewalo Marine Lab, University of Hawai‘i at Mānoa
- Smith, Celia, Professor, Dept. of Botany, University of Hawai‘i at Mānoa
- Takabayashi, Misaki, Professor, Marine Science, University of Hawai‘i at Hilo
- Unabia, Catherine, Associate Professor, Biology, Hawaii Pacific University

*Members of the indigenous peoples of their islands.

†Former undergraduate intern in a program at the University of Hawaii at Manoa

Supplemental Materials Part C

The agenda for Part 1 of the workshop

- Expert Presentations

To launch the workshop's discussion, two experts in the area of expanding participation by underrepresented minority students in college science programs were invited to address the workshop. Dr. Mica Estrada, University of California San Francisco, spoke on "Creating a Successful Assessment of STEM Initiatives," and Dr. John Matsui, University of California Berkeley, spoke on "Diversity Lessons from UC Berkeley's Biology Scholars Program (BSP). (Video recording of these lectures may be found at: <https://www.youtube.com/watch?v=h9jcTOGLUnY&feature=youtu.be>)

- The Panel Discussion

Before they traveled to Hawai'i, seven of the participants, one representing each island group, were asked to form a panel to briefly present the barriers to STEM education and career-participation as they understood them from the perspective of their own islands. The discussants were: Sean Macduff (CNMI), JoNita Kerr (Guam), Vernice Yuzi (Republic of Palau), Peltin Pelep (FSM), Donald Hess (RMI), Alden Tagarino (American Samoa) and Huihui Kanahale-Mossman (Hawai'i). The ten-minute presentations made by each person in this group deeply influenced the depth of the discussions during the remainder of the workshop. The panel presentations included both personal comments, e.g., ways in which growing up in their islands inhibited or retarded individual panelists' own development as scientists, as well as specific data relating to educational, financial and cultural limitations to local STEM training in their islands. The major points made by the panelists, were:

1. Public schools are poorly equipped to prepare students for STEM courses and majors in colleges. This problem includes lack of teacher training as well as the absence of science laboratories. Several panelists voiced the feeling that, "if a student's interest in science is not captured before she or he enters college, it is too late."
2. A pervasive culture of "science and math are too hard" for island students makes college-bound students unwilling to enroll in STEM courses. Undoubtedly, this point is related to the first one above.
3. Family obligations loom large for young people in all of the island cultures. As such, family plans and needs take precedence over entering college, college course requirements, and choices of careers. Many students choose college majors that promise jobs "close to home."
4. Financial obstacles are often overwhelming for students from most of the islands. Wages are low and 'subsistence living' is still common. While providing comfortable housing and sufficient food, subsistence living does not provide funds for college tuition and books, nor, especially for travel and enrollment at colleges far from home, e.g., within the U.S. states.
5. Language is a problem for many students from Palau, FSM, RMI, American Samoa and even Guam and the CNMI. English is a second language for most of these young people,

which injects an added obstacle when attempting to master college-level courses in STEM fields.

6. Geography presents a major barrier to education in several island groups, especially the Marshall Islands and the FSM. Distances between islands are great, schools are limited, and interisland travel for, e.g., high school, is undependable or nonexistent.
7. There is a general feeling that there are few jobs in the home islands in STEM fields, which has some reality when compared to major U.S. population centers.
8. Once students are enrolled in the island colleges, many of the problems noted above persist, and additional resistances to STEM enrollment arises, because, for example, faculties include a predominance of western-trained instructors who have little understanding of island cultural values and lack appreciation for the importance of family in the decision processes of their students.
9. Most of the island colleges outside Hawai'i and Guam do not offer majors in most STEM fields, and, for this reason lack up-to-date science labs and instructors to teach the STEM courses.

- **All-participant Workshop Activities**

During the remaining one and a half days of the workshop, all of the participants engaged in in-depth discussions of (day 1) the challenges and (day 2) potential solutions to the problem of under-participation of NHPIs in STEM education and STEM careers. These discussions were led by experienced professional facilitators who functioned to keep the group focused and moving forward on the challenges. Trained individuals also worked with the facilitators to record the verbal discussions. To increase individual interactions, the entire participant group was separated into three break-out groups each day to consider the challenges and solutions. Again, facilitators and recorders assured active interactions by all participants and a good account of the proceedings. The all-participants discussions were video recorded, in addition to the typed records.

Supplemental Materials Part D

Colonial history of Pacific Islands

Starting in 1521, when Magellan claimed Guam and the Mariana Islands for Spain, other colonial powers followed including France, Great Britain, Germany, Japan, and the United States. Missionaries introduced religions such as Roman Catholicism, Protestant denominations such as Lutheran, Presbyterian, Methodist, Baptist, and smaller groups such as Assemblies of God, Seventh Day Adventists, Jehovah's Witnesses, The Church of Christ of Latter-day Saints or Mormons (Swain and Trompf, 1995).

On Guam, during the Spanish, Japanese and U.S. colonial eras, respect required being silent and not questioning authority. Depending on the era, silence helped one to avoid a beating, being killed, or fined. Further, the Spanish-Chamorro War (1669-1695) and European diseases severely reduced the native population to 3,436 in 1710 - about one tenth that of the pre-missionary era (Hezel, 1982). Nearly 200 years of efforts by Jesuit missionaries and Spanish military leaders to convert and subjugate the Chamorros included a *reducción* policy that concentrated the people into manageable village areas surrounding a church. After the Spanish-American War ended in 1898, Guam was ceded to America and under the directive of President McKinley, U.S. Navy officers were to demonstrate to the Chamorros that the mission of the U.S. was one of 'benevolent assimilation'. This involved a succession of U.S. Naval governors who "exercised complete executive, legislative and judicial authority" (Hattori, 2009). Part of this effort included discouraging use of the Chamorro language. During WWII, Japan invaded Guam in 1941 and for three years, the Chamorros endured yet another attempt to subjugate their language and culture (Higuchi, 2001). When the U.S. liberated the island in 1944, Naval governors continued the policy that forbade speaking the native language in public places. Many natives became convinced that speaking Chamorro was backward and that speaking English would greatly benefit their children. This created a generation of native Chamorros who speak English fluently, but very little Chamorro.

Hawai'i's colonial experience began with its 'discovery' by Captain James Cook in 1778, more than 1000 years after it was settled by the Hawaiians. As with the Chamorros on Guam, thousands of Native Hawaiians succumbed to infectious diseases transmitted by Europeans. This precipitated changes within the chief governance system after King Kamehameha I used civil war, guns and cannons to unite Hawai'i under his rule. While he resisted efforts by missionaries to convert natives to Christianity, Kamehameha I also maintained control over foreign business and trade, which gained profits for the monarchy. Succeeding rulers saw a gradual erosion of power and control due to a combination of increasing business in the islands, Protestant missions, and local discontent with the monarchy. This set the stage for powerful business interests who forced Hawai'i's last monarch, Queen Lili'uokalani, to abdicate in 1893. In 1898, when Hawai'i became a U.S. Territory, Native Hawaiians were forbidden to speak their language and perform the native dances (hula)(HawaiiHistory.org 2018; <http://www.hawaiihistory.org/index.cfm?fuseaction=ig.page&PageID=398>). For more information on the legacy of colonialism in Hawai'i see Kauanui (2008).

Although originally claimed by Spain, subsequent colonialism in Palau, the Marshall Islands, Kosrae, Yap, Pohnpei, Chuuk, and the Northern Mariana Islands of Saipan, Rota and Tinian, primarily involved Germany and Japan. After the Spanish-American War of 1898, Spain sold these islands to Germany in 1899. Under German rule for the next 15 years, education in Micronesia consisted of Protestant or Catholic training from missionaries with lessons in reading, writing, arithmetic, and girls learning domestic science. (Shuster, 1979). After World War I, in 1914, the League of Nations South Pacific Mandate transferred the islands to Japan. Under Japanese Naval rule, Micronesian children in Saipan, Pohnpei, the Marshalls, Kosrae, Chuuk, Yap, and Palau were taught by Japanese Naval officers or officials of the Nanyo Boeki Company. As more Japanese moved to the islands to work and manage growing economies, a segregated school system was set up in which Japanese children received a typical homeland education comprised of eight years of lower and higher primary programs. In contrast, most native students received three years of basic instruction, and if part of a small select group, two years of supplementary education. Japanese students were given a national education that provided skills that prepared them for livelihoods associated with economic growth in the e.g., islands, whereas Micronesian children were taught Japanese language and ethics so that they could ‘understand the Japanese and obey their orders’ (Shuster, 1979). While Japan’s efforts to educate natives far surpassed other nations with mandates in the Pacific - Great Britain in the Gilbert Islands, Australia in Nauru and New Guinea, and New Zealand in Western Samoa – Micronesians were not offered higher education or teacher-training opportunities, except perhaps those who had a Japanese parent. The results of this education system relegated the natives to a lower position in the social hierarchy (Shuster, 1979).

References

- Hattori, A. P. (2009). Colonialism, Capitalism and Nationalism in the US Navy's Expulsion of Guam's Spanish Catholic Priests, 1898-1900. *Journal of Pacific History*, December 2009; 44(3): 281-302.
- Hezel, F. X. (1982) From Conversion to Conquest: The Early Spanish Mission in the Marianas. *Journal of Pacific History*, 17: 115-137.
- Kauanui, J. (2008) Colonialism in Equality: Hawaiian Sovereignty and the Question of U.S. Civil Rights. *South Atlantic Quarterly* 107(4):635-650.
- Shuster, D. R. (1979), Schooling in Micronesia During Japanese Mandate Rule, *Educational Perspectives*, 18(2) 20-26. <http://hdl.handle.net/10125/47488>
- Swain, T., & Trompf, G. (1995) *The Religions of Oceania from the Library of Religious Beliefs and Practices*. New York, NY: Routledge. 244 pp.

Supplemental Materials Part E

Chief systems, family and religion

American Samoa has a Polynesian patriarchal chief system that forms the basis of “*fa’a samoa*, the Samoan way of life.” The *matai*, or titled ones, are responsible for the welfare and holdings of their clan, or extended family. Together, all the *matai* comprise the *fono*, which is governed by the chief of the highest level, or *ali’i*. The *matai* system is all about the family and ensuring that the needs of the family members are met. The system has adapted to accommodate members who go off-island by allowing a *matai* to rule by proxy. As long as the absent *matai* continues to support the family at home, he is allowed to retain his title (Johnston 2010).

Supplemental Materials Part F

The Compact of Free Association (COFA) agreements with the counties of Federated States of Micronesia, Republic of the Marshall Islands and Republic of Palau.

In 1947, after the end of World War II, the U.S. administered Palau, the Marshalls, Chuuk, Mariana Islands, Kosrae, Yap and Pohnpei as the Trust Territory of the Pacific Islands (TTPI), under a UN Security Council resolution (United Nations Yearbook, 2018). In 1986, the Republic of Palau, Republic of the Marshall Islands, and the Federated States of Micronesia chose independent, sovereign status with the relationship of free association with the United States. The Compacts of Free Association (COFA) allow residents of COFA islands to work and travel anywhere in the U.S. without a visa, and access to healthcare and benefits of certain federal programs, in exchange for allowing U.S. military presence, certain operating rights, the capacity to refuse access to foreign countries in COFA territory, and other agreements (<http://www.uscompact.org/about/cofa.php>).

The Northern Mariana Islands have commonwealth status with the U.S. and remain a U.S. territory along with Guam and American Samoa (<https://www.uscis.gov/tools/glossary/us-territories>).

References

United Nations Yearbook (2018). 1946-1947, Part 1, Sect. 3, Ch. C. *Trusteeship Agreement for the Former Japanese Mandated Islands*, p 394.
<https://www.unmultimedia.org/searchers/yearbook/page.jsp?volume=1946-47&bookpage=394>

Supplemental Materials Part G

Comments made by participants on major topics.

G-1. Comments on Cultural Barriers.

The comments, or truncated descriptions of experiences, from workshop participants, transcribed from the facilitators' flip-chart notes or from video recordings are presented below. For clarity, some were modified grammatically or shortened. They are not direct quotes. The comments provide additional insight about situations that indigenous participants encountered as students or faculty.

Barriers posed by chief systems, family, religion, and stereotypic threats

- In Palau when a family member dies, kids are taken out of school for a week and they fall behind.
- On Guam, family is very important, and the main religion is Catholicism. When a family member passes away, obligations include assisting with the nine-day rosary (*lisayu*), the funeral itself, and the *finakpo*, or the conclusion of the rosary and funeral. The *finakpo* traditionally involves much site and food preparation. Family members are obligated to be available to help with other duties such as preparing the home for visitors, cleaning the church, or watching young children or older relatives. (also, see de Frutos 2012).
- When one of my family members passed away, I got hit pretty hard and started skipping school and weekly meetings with my advisor. I slacked off, not because I was losing interest, but because my family member had died, and I couldn't be there to do the work (for the funeral), it felt bad being far away.
- I experienced cultural shock; the tallest building in Pohnpei is only four stories, but when I came to Hawaii, it was like in the movies.
- Besides being far away, living on our own is not a major part of our island lifestyle. Here in the Western lifestyle, once you reach 18, you're independent, you need to leave your parents and go live on your own. Back home we don't do that, parents don't tell their kids to move away; they'd rather keep their kids with them. We grow up with a family-oriented mentality. One thing that might affect students that are traveling from smaller islands just to pursue higher degrees, the fact that they're leaving their family can affect their learning skills. I had aunties and uncles here, but I missed my family for the whole duration of time.
- There is a lack of buy-in with science in general, as it is viewed with suspicion and not to be trusted since it goes along with the topic of evolution, which runs contrary to several belief systems.
- If a parent or elder does not agree with a topic, they will not talk about it.

- Challenging cultural values can lead to disrespecting elders, (or) questioning cultural norms and traditions while pursuing research.
- One thing that got me was the stereotype (sic) threat. It doesn't just happen within the institution (college). I experienced stereotype threat outside of the institution, within the community; in some cases, hearing the word 'Micronesian' is not the friendliest word. That's basically a stereotype. I experienced it myself on the airplane traveling from Honolulu to Hilo. It is one of the major barriers if you're coming to Hawai'i, or if the student is going to Guam. A lot of things are happening in the community that are targeting the students with that ethnicity (Micronesian) and it can actually affect their learning experiences.

Language, relevance, and connecting methodology to island sensibilities

- Language can be a major barrier for Pacific Islanders; when I was at the college, I saw that trying to speak English can inhibit or restrict students' learning. A lot of the foreign instructors don't see this. Language is a main issue for Pohnpeians, Marshallese, and other islanders and ethnic groups whose first language is not English.
- The science is felt as not Hawaiian enough, while in Hawaiian culture is felt as not science enough
- Strong native Hawai'ian students are coming up. But there is a double standard in Hawai'i of culture vs. science. Students feel, if I want to be a professor, I have to be good at both, and thus have to work twice as hard.
- Survival on a Pacific island requires cultural knowledge, which is based on science. (A student) needs to learn both, but it takes more time.
- Integration of culture and science – there is an intrinsic bias and value system attached to it.
- Science is a human endeavor and is a cultural practice.
- There is a tendency to see the local cultures as “less than” (Western science).
- Make science relevant and real in our whole lives, but there is a false perception of a separation of science and culture.
- Religion sometimes conflicts with science learning.
- The way STEM is taught is in a manner that is “western” or linear and hard to connect with culture
- Institutions are not culturally responsive – (they) skim talent.

- Once, I went to an instructor for help, but he told me to come back during office hours. I never went back to that instructor, or any other, after that.
- Native students look to their families first for help. If confronted with academic or financial difficulties, Pacific Island students would rather seek help from family and friends, or even drop out and fail, to avoid approaching a teacher.
- Native Hawaiian and local students will not ask for help – it is perceived as a sign of weakness or buying into the colonial administration. They don't know how to ask or are afraid to appear stupid.
- Young children do not talk so much, they just listen; they do not speak in front of elders, so they do not speak in class. They only speak when asked to speak, otherwise they are disrespectful; they do not ask questions (in class) when they really need to do so.

Opportunities in STEM-related careers – awareness and availability

- Students do not take science because they are not familiar with it.
- Students do not think they can succeed in science because they did not do well in lower courses.
- On Guam, students might not be aware that STEM degrees can lead to other careers besides medicine, engineering, law or academia.
- There is so little opportunity to pursue a career locally with integrated knowledge. There is a lack of local STEM diversity for jobs, which are currently mostly military.
- There is a need for more support: teachers, family, government financing and all levels of the whole process.
- There is a lack of role models (of native descent).

G-2. The K-12 education dilemma as a barrier to STEM education and careers.

- Students are afraid of STEM courses, because they do not see any relevance. Maybe they are not aware or think there is a lack of jobs available with just a bachelor's degree.
- Lack of awareness or understanding of the values of STEM education in the community leads young people away from interest in STEM careers.
- Students' limited exposure to structured education and pre-college STEM reduces their experiences and interests in science.

- Limited exposure for students to STEM pre-college and a structured education reduces students' experiences with science.
- STEM is not relevant to students – they don't see the connection to their lives.
- Poor teachers are a barrier. The ones who stand out are the ones that help you. As an instructor, I do my own method. I don't teach the scientific method. I ask the students: what do they do to prepare for this class? Often, what they were doing is the scientific method. Give them science in a way they do not know they are learning it. Connect to grandparents, this is the reason why something happened, or why culture is the way it is.”
- Teachers are averse to math.
- In Guam, the larger policy limits what teachers can teach (e.g., they “teach to the test”).
- Native Hawaiian and other Pacific Islanders do not ask for help because they see it as a sign of weakness (they don't know how to ask or feel afraid to appear stupid).
- In Palau, access to technology is harder in some areas.

G- 3. Financial barriers to STEM education.

- I am from Pohnpei. The University of Hawai'i requires tuition payment in timely manner, but scholarship funds come in late. Our government meets in late August - September, but it doesn't get scholarship info to University of Hawai'i in time for the deadline.
- Financial aid changes—scholarships vary from year-to-year.
- Financial support/ benefits because minority faculty are rare and get headhunted by other universities. Local faculty should be offered higher salary by universities or better packages than international faculties.
- Provide scholarships with incentives for students to give back to their communities or pay back the scholarship funds.
- Needs for more support: teachers, family, governments (financing) and all levels of the whole process.
- Financial difficulties - can't go to conferences.
- Lack of coordination across Pacific institutions continues to limit students' access to funds, opportunities.
- It is time to invest in all aspects of STEM research and education in this critical part of the Pacific region, to overcome 1950's policies that aim to keep residents under-

educated, to use electronic technologies to link like-minded institutions to nurture this next generation of STEM leaders who will help us all by raising the standards, asking the correct questions for resource management and finally putting policies and best practices in place, to protect their island communities in the face of global change.

- A Micronesian participant, now teaching at an Island college, related that he had been a student who participated in the NSF-UMEB and URM internship programs at the University of Hawai‘i. He said that when he left his home island he faced difficulties that included insufficient financial support, long distance travel away from family, reticence to seek assistance, and threats based on being stereotypically characterized in definitely negative terms.
- A participant from the Commonwealth of the Northern Mariana Islands related very similar experiences when he left Saipan to further his education in Hawai‘i. Both participants gained focus and direction from individual mentoring in the U.S. with financial assistance that was critical to their success.

Supplemental Materials Part H

Culturally-relevant, placed-based resources.

Participants frequently pointed to the lack of culturally relevant, place-based science resources. NHPI students find it difficult to relate to available Western science curriculum and how it is presented to them. There is a perception that local cultures are ‘less than’ Western Science. Yet it is clear that to survive on an island, it is necessary for residents to be knowledgeable of their surroundings, and a curriculum based on their island environments would increase interest in science. To help with this endeavor, below are some resources that K-12 and college teachers can access and adapt to their particular island.

(1) Life on Guam series – <http://cnas-re.uog.edu/other-non-cnas-publications/>

This series provides detailed descriptions of Guam’s various ecosystems that can be adapted to other Pacific islands. Click on the link, scroll down to Life On Guam (High School Student Curriculum Series), and download scanned copies.

(2) PREL (Pacific Resources for Education and Learning) - <http://prel.org/index.php?>

This website provides place-based resources that teachers can adapt to their particular island, as well as suggestions for developing curriculum.

Picturing Science - <http://picturing-science.prel.org/>

Pacific islands Climate Education Partnership (PREL website)

<http://prel.org/index.php?/programs/pacific-islands-climate-education-partnership>

Water for Life - <http://prel.org/index.php?/programs/water-for-life>

Ulu Kalihi – <http://prel.org/index.php?/resources/ulu-kalihi>

Promotes environmental stewardship among children and educators in the Kalihi Community

(3) ANSEP – Alaska Natives Science and Engineering Program - <http://www.ansep.net/index>

This website features programs for high school and middle school students (Acceleration Academy for High School graduates, Summer Bridge Program, Summer Academy for middle school students) which can be used as models for similar programs for NHPI students.