Native Universe

Honoring Indigenous voice in science museums to deepen our relationship with nature














Native Universe: Collaborative Research, Full Scale Development: Indigenous Voice in Science Museums (1114611) is a four year project funded by the National Science Foundation, a collaboration led by the Indigenous Education Institute, Friday Harbor, WA and Santa Fe, NM.

Collaborating institutions include Multiverse, Space Sciences Laboratories, UC Berkeley (1114611) and the `Imiloa Astronomy Center, UH Hilo, HI (1114535)

Partner Institutions included the National Museum of American Indian (NMAI), and the Association of Science and Technology Centers (ASTC),

Native Universe (NU) was designed to build institutional capacity in leadership and practice among scientific museums, in order to increase public understanding of environmental change and the human relationship to nature from Indigenous perspectives, while also providing access to science as practiced in the established scientific community.

The 3 case study museums are:
Oregon Museum of Science and Industry (OMSI), Portland, OR
Arizona Sonora Desert Museum (ASDM), Tucson, AZ
Powerhouse Museum, Durango, CO.

The project involved 9 month residencies at each museum with intense multi-cultural professional development through week long workshops and continuous mentoring throughout the 5 year project (4 years plus 1 year of no-cost extension). Small seed grants offered by the NU team provided much needed funds to develop many deep and lasting working relationships with Indigenous peoples and tribes in their local communities. The NU team deepened its collaborative methodology and showcased a model of best practices for collaboration. Evaluation was conducted by the Life Long Learning group, Center for Science and Industry (COSI), in Columbus, OH, and Native Pathways, Laguna Pueblo, NM, which formed a multi-cultural evaluation and research partnership.

Goals and Objectives:

The project began with a strategic planning meeting to organize the project, with the use of the Dine (Navajo) Cosmic Model, developed by Drs. Maryboy and Begay. We created a four direction cyclical model in which all goals, objectives, activities and evaluation were aligned. The time spent on the planning and the early group collaboration on every aspect of the project gave us a firm foundation and direction to follow throughout the five years.

The project continued with a week-long intensive initiation on the island of Hawaii, an experiential journey exploring how the `Imiloa Astronomy Center grew out of a partnership with the Native Hawaiian community. We were guided every step of the way by Native Hawaiian leaders from local communities. Participants included the Native Universe leadership team, directors and staff of our three case study museums, Native Hawaiian knowledge holders, as well as educators and scientists. We had visits to ancient temples, sacred sites, traditional fish ponds, the ancestral land and observatories at Mauna Kea, ending at `Imiloa Astronomy Center in Hilo. We learned from people, the land and the water. Each site featured presentations from Indigenous and scientific perspectives, as well as interactive activities and much sharing among participants.

We then held three nine-month residencies, where we concentrated our resources at the science centers and their local Indigenous communities. Each residency has been unique to the specific science center and its local tribal communities. Our evaluation and research has shown evidence of transformational change among leadership and staff, and the growth of strong partnerships with local Indigenous communities.

We held two week-long site visits at each of the science centers during the nine month focus. At the site visits we worked intensely with small and large groups of personnel from each museum and visited local communities. This included meetings with museum leadership, staff, volunteers, board members, community members, students, local Indigenous tribal leaders, educators, youth, and knowledge holders. Many meetings were at the museums but others were experiential, utilizing native processes of learning from the land. We held walks in the desert with Tohono O'Odham elders and youth, journeys by narrow gauge railroad, with Ute, Navajo, Native Hawaiian, geologist, astronomers, educators, youth, all presenting the land of the Colorado Rockies through their own perspectives. We learned collaboration through canoeing in the Columbia River. We had many other experiences which were team building and educational.

Research and Evaluation

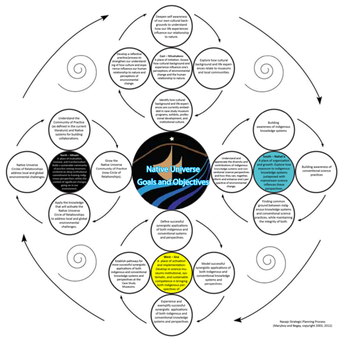
The Native Universe process featured research and evaluation through multiple lenses. Evaluators are Dr. Joe Heimlich, COSI, Jill Stein, COSI, Dr. Shelly Valdez, Native Pathways, Laguna Pueblo. All evaluation was done by this collaborative team, with co-developed instruments, analysis, and reporting. There was significant input from the leadership team and partners throughout the project.

The evaluation was conducted through multiples lenses:
- Conventional/western evaluation
  - *Developmental Evaluation (M. Quinn Patton, 2011)
  - *Culturally Responsive Evaluation (AEA, 2011)
- Indigenous Evaluation
  - *Principles of Indigenous Evalution
  - *Examples of establishing tribal IRB
  - *One of our CoPI's from IEI is a member of the Navajo Nation IRB

Initial Research Findings

East: Nitsahakees: a place of initiation: Baseline/Front-end Research
Baseline interviews, focus groups, and an online survey at each of the 3 sites revealed the following characteristics before the Native Universe Residency:
- High level of leadership support
- At least 1-2 Individual "early adopters" who had collaborated with Indigenous communities and supported inclusion of Indigenous Voice
- Limited examples of Indigenous Voice present within the museum walls; mostly present through programming
- Collaboration with Native communities had been mostly isolated and project-based
- Majority of staff and volunteers have low/moderate sense of experience and expertise around inclusion of Indigenous Voice (higher perceptions for Museum than for Self)
- Majority of staff and volunteers have moderate to strong interest, value, and openness to inclusion of Indigenous Voice (higher for Self than for Museum as a whole)

Native Universe Evaluation Model



South: Nahat'a: a place of organization and growth: Documenting Residencies at 3 Case Study Sites
The 9-month residencies at each of the sites resulted in the following areas, particularly focused on the two weeklong site visits by the Native Universe team:
- Museum staff, volunteers, and community members ("participants") experienced immersive and hands-on learning connected to land and cultures
- Participants built new relationships and learning related to inclusion of Indigenous Voice
- Participants increased awareness of local tribal communities, urban Indian communities, local history
- Participants increased awareness of strategies for collaborating with integrity with Native/tribal communities
- Participants reflected on individual and institutional paradigms

West: Iina: a place of activation and implementation: Activities, Relationships, Partnerships
In the post-residency phase at each museum site, the project pathway focused on the following areas:
- Shifting from project/service mentality to relationship building
- Forming deeper collaborations and inclusion of Indigenous voice
- Involving more staff and volunteers beyond the "core" team
- Positive change in reflective practice around inclusion of Indigenous voice (in exhibit and program development, proposal writing, new initiatives)
- Positive change in awareness of local tribal and urban Indian communities, and awareness of Native Universe work within the museum
- Positive change in perceptions of museum's openness, inclusion, commitment and leadership support
- Positive change in awareness of local tribal and urban Indian communities, and awareness of NU work
- Positive change in perceptions of museum's openness, inclusion, commitment and leadership support

North: Siihasin: a place of evaluation, renewal, and transformation: Sustainability and Community of Practice
Follow-up interviews and focus groups with museum sites and leadership team show that:
- Sustainability of this work is challenging

- Increased support from leadership and board has occurred and needs to continue to grow
- Some sites are moving beyond "one off" relationship and building more sustainable partnerships
- Native Universe continues at each site with stronger advocate base, relationships with tribal community partners, and some change in institutional structures
- Core individuals continue to be strongly connected to the Native Universe com munity, participating in webinars and related projects, building new projects with NU partners

Collaborative Team:

The Indigenous Education Institute (IEI) is a 25 year-old non-profit organization with an all Indigenous board and an advisory council made up of renowned knowledge holders and scientists from around the world. IEI focuses on the preservation and contemporary application of traditional Indigenous knowledge, including Indigenous Astronomy and Tribal Ecological Knowledge (TEK). This highlights the interrelationship of all processes of earth and sky. Traditional knowledge can provide greater global sustainability through avocation of reciprocal stewardship of the earth and cosmos, leading to harmonious, balanced outcomes, while enhancing recognition of Indigenous science, through processes that respect the honor and integrity of both ways of knowing. The goals of the Institute were developed to provide awareness of the importance of cultural and linguistic diversity in the world today.

Today, as never before, IEI's mission is of vital importance as it speaks strongly to the significance of balance to create a healthy environment. Utilizing a lens of contemporary scientific perspective along with a traditional Indigenous perspective illuminates the complementary aspects of both ways of knowing and a greater sense of understanding the earth and sky that would not be possible with one perspective alone.

IEI was the lead institution for the NSF grant – **Cosmic Serpent: Bridging Native Ways of Knowing and Western Science in Science Museums**

IEI is a collaborative partner for the NSF grants:

* **I-WISE - Indigenous Worldviews in Informal Science** Education (I-WISE): Integration, Synthesis, and Opportunity (led by `Imiloa Astronomy Center, UHH)
*__Generations of Knowledge__, Roots of Wisdom exhibit (led by Oregon Museum of Science and Industry)

Multiverse is an educational component of the Space Sciences Laboratories, UC Berkeley. The vision of Multiverse envisions a world filled with science literate societies capable of thriving with today's technology, while maintaining a sustainable balance with the natural world; a world where people develop and sustain the ability to think critically using observation and evidence and participate authentically in scientific endeavors; a world where people see themselves and their culture within the scientific enterprise, and understand science within the context that we are all under one sky and on one earth.

`Imiloa Astronomy Center, University of Hawai'i Hilo is an Astronomy Center which tells the stories of two different peoples: Native Hawaiians and modern western astronomers. The comparison of these stories illustrate points of divergence and synchronicities. The science center models both Indigenous and scientific administration and perspectives. Bilingual exhibits, employees and presentations make `Imiloa a place where English and the Hawaiian language are spoken. Emphasis on the Hawaiian language affirms the identity of the Hawaiian people and how they understand and relate to the Universe.

Native Universe Team

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