



# Indigenous Worldviews in Informal Science Education (IWISE) Conference

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## *Summative Evaluation Report*

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## Executive Summary

The National Science Foundation funded the Indigenous Worldviews in Informal Science Education (IWISE) conference grant (NSF-DRL #1250571), led by `Imiloa Astronomy Center of the University of Hawai`i and the Indigenous Education Institute (IEI), to convene a three-day national conference to bring together principal investigators, educators, scientists, policymakers, learning researchers, and Native youth to advance understanding around the convergent margin of Native and Western science in informal STEM education. The goal of the conference, which was held September 2-5, 2015 in Albuquerque, NM, was to identify and synthesize theoretical approaches, methods, and findings of work to date, leading ultimately to a research agenda in this area. The conference was structured around the following strands: 1) Youth; 2) Education; 3) Environmental sustainability; 4) Policy; 5) Collaboration with Integrity; and 6) Evaluation and research.

The Lifelong Learning Group (LLG) and Native Pathways (NaPs) were engaged to conduct summative evaluation of the IWISE conference, focused on resulting impacts on participants around increased awareness and understanding of Indigenous worldviews in science education, and relationship building toward collaborative partnerships in this area. Jill Stein and Dr. Joe Heimlich of LLG, and Dr. Shelly Valdez of Native Pathways, drew from their multiple joint collaboration efforts to inform a cross-cultural evaluation process.

### Evaluation questions

The summative evaluation of IWISE was guided by the following evaluation questions, developed collaboratively with the project team and partners:

- 1) To what extent and in what ways does the conference identify existing work and themes in the area of Indigenous worldviews and ISE intersections, and what components best support these efforts?
- 2) To what extent and in what ways does the conference result in a research agenda and actionable recommendations to advance the field in the area of including Indigenous worldviews in ISE?
- 3) What impacts does the conference have on participants' knowledge and awareness of current efforts, research, and lessons learned around bringing Indigenous worldviews into ISE settings?
- 4) To what degree and in what ways do conference participants build relationships and carry knowledge from the conference back into their own professional environments or home institutions?

### Methods and Process

In order to answer the evaluation questions and tell a comprehensive story of how participants are impacted by their participation in the I-WISE conference, the evaluation team utilized the following methods: 1) *Pre-conference online survey*, which documented participants' current knowledge, understanding, and experience related to Indigenous worldviews in STEM education; 2) *Participant-observation*, in which three evaluation team members participated fully in the conference, including pre-conference webinars, and took field notes related to the key evaluation questions; 3) *Daily reflections*, in which conference participants were invited to provide written

reflections on their key learning, realizations, and continued questions around the conference themes; 4) *Post-conference online survey*, which documented immediate responses and outcomes related to the conference goals; and 5) *Delayed post interviews and discussion groups*, which engaged a subset of conference participants about 6 months after the conference in order to document the ways in which they had continued to build relationships and utilize ideas, resources, or other learning from the IWISE conference in Albuquerque.

## Key Findings

### Evaluation Question 1 – Identify existing work and themes

- The IWISE conference in Albuquerque, NM, was highly successful in bringing together a diverse and thoughtful group of professionals, elders, traditional knowledge holders, and Native youth in order to identify existing work and themes around Indigenous worldviews in informal STEM;
- Participants felt the quality of the keynote speakers, panelists, special guests, and participants contributed to setting the stage for learning and bringing out key ideas and examples of this work;
- Many key themes emerged within and across the five conference strands (Collaboration with Integrity, Environmental Sustainability, Evaluation, Holistic Education, and Next Generation Youth). These included:
  - Need for holistic perspectives on learning, in which informal environments are just one part;
  - Reciprocal and balanced approaches to “intersections” of Indigenous worldviews and STEM, so that all perspectives are honored (that is, it’s not just about Indigenous knowledge enriching western science, but STEM efforts must also support Indigenous core values);
  - Ensuring that Native communities are primarily benefiting from STEM practice and research that collaboratively involves them;
  - Focusing on intergenerational learning that includes and honors the wisdom of elders, and supports the growth and leadership of Native youth;
  - STEM learning needs to start from a holistic “Science of Place,” based on the land, place, culture, community, and core values;
  - Language and frameworks need to be reconsidered at all levels from a cultural perspective; for example, from Indigenous perspectives, the term “informal” can inadvertently convey that the knowledge shared in these environments is peripheral and of less value or importance.

*“Traditional knowledge is a powerful source of science, and that all knowledge is in our genes, we just have to notice, to read, to hear again the songs, and it all will come back to our minds.” – IWISE conference participant*

### Evaluation Question 2 – Impacts on Participants

- The IWISE conference was highly successful in its efforts to increase awareness and understanding in the area of Indigenous worldviews in ISE, as well as to continue building a community of practice (Circle of Relationships);

- Participants rated their gains quite high (7.81 out of 10, on average) around awareness of current efforts to bring Indigenous worldviews into science learning; as well as their gain in awareness around challenges (7.41) and strategies for addressing challenges (7.75). Participants rated their gains in awareness of current research somewhat lower (6.66, on average).
- Qualitative data supported the fact that participants felt they increased knowledge and awareness in these areas, driven by the feast day in Acoma Pueblo, the inclusion of elders and local knowledge holders, and the presence and participation of Native youth.

### Evaluation Question 3 – Relationship-Building and Transfer of Knowledge

- One of the strongest outcomes of the IWISE conference was around building relationships to support continued work around inclusion of Indigenous worldviews in science learning environments. This was the highest rated area of gain in the post-survey (8.53 out of 10, on average), and building a community of like-minded, though diverse, individuals was a key theme in qualitative responses as well
- Many participants felt they found an intellectual “home” among the conference participants; some felt they were working in isolation with no support systems and saw the IWISE community as a welcome source of support, inspiration, and encouragement.
- Participants continued to connect to one another, seek advice, share resources, and plan programming together as a result of the conference.

### Evaluation Question 4 – Defining Research Agenda and Actionable Recommendations

**To be included in the final report – after the DC policy meeting.**