



I-WISE Environmental Sustainability Strand

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The Environmental Sustainability Strand Leadership Team developed four broad guiding questions in tandem with the IWISE overall goals that provided guidance and focus to the all the presentations and discussions during the Albuquerque conference breakout sessions. A total of 16 people signed up for this session in the preregistration. However, many more participated in the strand, with some people coming in for only one or two days. The following were the guiding questions:

1. What are the basic ideas of sustainability from a 'scientific' perspective and from the perspectives of Indigenous peoples?
2. What does environmental sustainability mean from Western science perspective and Indigenous ways of knowing?
3. What is needed to better understand environmental sustainability?
4. What is needed to better understand how environmental concerns can enhance understanding of environmental sustainability? i.e., Health, Biodiversity, Gender, etc.

Commonalities among projects:

The primary purpose of the IWISE Conference was to bring together individuals and organizations working in fields related to Indigenous Worldviews in Informal Science Education. In the case of this strand, there was a further focus on Environmental Sustainability. Those who participated brought their insight and experience to share since most were already working to integrate Indigenous Peoples' perspectives within their work. Others, who had little experience, wanted to gain a better understanding of how they might improve their projects. The result was a broad spectrum of teachers and learners with a variety of experience. It became apparent that participants and projects demonstrated the natural learning trajectory that comes from learning about intellectual aspects of Indigenous worldviews; the physical manifestation of culture; the sacred and spiritual elements contained within worldviews; and the affective dimension of worldviews, including ethics and values.

Information shared by participants varied widely in content and geographic region. Projects anchored in the USA were able to consider differences and similarities with projects underway in Canada. With informal science education as a common denominator, it was clear from all contributors that the foundation of Indigenous worldviews emerges from the heart of Indigenous communities. The traditional customary laws and principles of behavior of respective Indigenous nations form the basis for interaction with all else in Creation. Learning these traditions takes a lifetime and so there will always be varying degrees of understanding, enactment, and sharing based on individual readiness, role within one's Indigenous community, and stage of life. Cultural worldviews are unique to distinct Indigenous nations but there are some common principles that are often shared, such as with customary laws of respect. Specific traditional teachings, which give rise to worldviews, belong to specific Indigenous nations and should not be appropriated for use

by anyone who does not have permission from the traditional knowledge holders. However, in cases where teachings are shared and permission is given, other individuals can apply the teachings they have learned within their work, whether that is in natural sciences, healthcare, education, or some other public institution. The application of Indigenous worldviews in informal science education can be useful for advancing good decision-making concerning the environment and its long-term sustainability.

Recommendations:





Intellectual Knowledge Considerations:

<ul style="list-style-type: none"> ✚ Ensure concrete methods of dissemination of research and better community engagement
<ul style="list-style-type: none"> ✚ Use media arts and technology to document community interviews and intergenerational transfer of knowledge
<ul style="list-style-type: none"> ✚ Support Indigenous research methodologies
<ul style="list-style-type: none"> ✚ Acknowledge that healing (participation, engagement, outcomes) happens in different ways and is dependent on the community involved
<ul style="list-style-type: none"> ✚ Provisions in the grant applications should be made by NSF to enable middle school and high school indigenous students to participate in NSF-granted projects.






Physical Knowledge Considerations:

<ul style="list-style-type: none"> ✚ NSF should support Native organizations and projects that have demonstrated the capacity to integrate credible Indigenous knowledge into science
<ul style="list-style-type: none"> ✚ NSF should give some priority consideration to grant proposals that will include practical application to Native communities of research findings
<ul style="list-style-type: none"> ✚ NSF should give supplemental support to research projects that are now “doing” useful research applicable to Native communities and benefits
<ul style="list-style-type: none"> ✚ NSF should develop constructive ways to support Native projects that respects sovereignty
<ul style="list-style-type: none"> ✚ Support Indigenous Peoples active involvement in NSF projects
<ul style="list-style-type: none"> ✚ Share resource revenue from projects
<ul style="list-style-type: none"> ✚ Acknowledge Indigenous Peoples intellectual property rights
<ul style="list-style-type: none"> ✚ Give attention to media outreach and communication for Indigenous knowledges and Peoples concerning sovereignty and violations involving environmental issues
<ul style="list-style-type: none"> ✚ Hire at least one Indigenous person to work at the NSF
<ul style="list-style-type: none"> ✚ NSF should create framework for smaller indigenous organizations and tribes to participate in NSF projects as independent grantee with minimal subordinate role to bigger institution to avoid complicity and inappropriate impact of rules and expectations.
<ul style="list-style-type: none"> ✚ NSF and Native communities should put more focus on how research results are “returned” to the community to address their needs
<ul style="list-style-type: none"> ✚ All research should be tied and relevant to community needs
<ul style="list-style-type: none"> ✚ Native communities should be empowered by engaging them in all phases of the research process

Spiritual Knowledge Considerations:

 Acknowledge diversity of people in advancing science projects
 Be aware and avoid projects that simply seek to extract Indigenous knowledge from communities for the purpose of the researcher only (spirit suckers)
 Acknowledge that there is no need to validate traditional knowledges in relation to "other" kinds of knowledge. TK stands on its own ontological and epistemological validity.
 NSF projects need to come from Indigenous Peoples themselves to assure their own perspectives are intact, they are recognized for their contributions, and are able to build capacity for additional project work.

Affective Knowledge Considerations:

 Avoid complicity with those who do not support Indigenous worldviews
 NSF should continue to support indigenous projects that are not connected to large established institutions.
 Engage grass-root communities in all phases of proposal process so the research questions are rooted in the needs of the communities and the research goals are owned in part by the community-constituencies as true participants.
 More emphasis should be on put on "approaching" Indigenous communities and knowledges in a more appropriate manner
 Researchers should be more aware of how Native language shapes values and goals of the research projects