

Final Report

Northern New Mexico Pueblos/NASA

Round Table Dialogue

A Diversity-Innovation Working Group (D-IWG)
sponsored by NSF's NM EPSCoR and NASA's Science Mission Directorate

23-25 March 2018
Santa Fe, NM

Co-Conveners:

Matthew Martinez, PhD
Lt. Governor, Ohkay Owingeh Pueblo

Richard Bailey, PhD
President, Northern New Mexico College

Daniella Scalice
Education and Communications Lead
NASA Astrobiology Program

Facilitators:

Lisa Faithorn, PhD
Randle Charles
Academy for the Love of Learning

Background:

The Northern New Mexico Pueblos/NASA Round Table D-IWG builds on the relationship-building efforts of the past several years between NASA, Northern New Mexico College, the constituents of the 8 Northern Indian Pueblos Council, and other community-based organizations. In 2014, Co-Is Scalice and Martinez met with the Eight Northern Indian Pueblos Council to introduce NASA and open the dialogue about pursuing next steps between tribes, NASA, and the College. This initial meeting was well received, and a follow up meeting took place in 2015 with the education staff from the Pueblos.

This D-IWG also builds on 13 years of prior experience and success of the “NASA and the Navajo Nation” project, which began in 2005 with a round-table dialogue to look at a seemingly simple question: *Is the Navajo Nation interested in partnering with NASA on educational initiatives?* That question was discussed and debated from the perspectives of various organizations and leaders on the Navajo Nation in a 2-day summit in January, 2005. The outcome was yes, there was a clear interest in partnering. In terms of ‘how,’ guidance was expressed that Cultural knowledge and scientific knowledge should be treated equally, and STEM learning must not come at the expense of Cultural identity. Follow-up funding from NASA enabled the production of [two unique educator guides](#), and multiple teacher workshops, student Summer camps, and other STEM-related community events—all ongoing activities today.

Over the years, the NASA and the Navajo Nation team has learned that when scientific and Cultural knowledge are brought into the same space—a “dual-learning” environment, wherein neither dominates over the other, the learning of one is greatly enhanced by the simultaneous learning of the other. When connections are created between the two by the learner, a grounding in Culture supports a growth in STEM identity. But the most potent lesson learned is that such long-term success can only occur when a strong foundation is laid by investing in time up front for dialogue and trust building.

Purpose:

The Round Table convened education and Cultural leaders of the Pueblo communities of Northern New Mexico, including especially youth leaders and teachers, as well as others from the area and community writ large.

The purpose of the meeting was to bring together voices in Northern New Mexico Native American education to discuss values, issues, and needs of Native youth and communities in order to ascertain whether or not schools, organizations, and/or tribes, either together or separately, are interested in partnering with NASA or other science organizations on educational initiatives. If such partnerships are desired, how should they proceed? What values and goals should guide them? What kind of programs could be co-created?

The Round Table’s conveners envisioned it would serve as a foundation for the development of guiding philosophies and principles that could shape future collaborative endeavors, and would be a next step in continuing to build trust toward the realization of a vision wherein Native youth can pursue STEM while maintaining their Cultural identities.

Implementation of the D-IWG:

Awarded by NM EPSCoR in Spring, 2017, the Round Table was initially planned for October, 2017. Due to an unexpected illness of one of the original co-conveners, it was postponed, and finally held on March 23-25, 2018 at the Buffalo Thunder Resort in Santa Fe, NM.

The co-conveners decided on a strategy for participant recruitment that would bring a balance of grassroots and high level voices to the table. Invitations were made to professors, administrators, organizational leaders, elders, Principals, teachers, community-organizers, and parents. In some cases, lodging arrangements were made to accommodate those who lived outside the local community area. A total of 37 individuals from 24 organizations participated for one or more days of the D-IWG. The following institutions were represented:

Native American Community Academy (3)
San Juan Elementary School (3)
Kha'p'o Community School (3)
Tewa Women United (2)
Española Valley Public Schools (2)
Santa Fe Indian School (2)
San Ildefonso Pueblo (2)
Academy for the Love of Learning (2)
Luciente, Inc. (2)
University of New Mexico (1)
Los Alamos National Laboratory (1)
Picuris Pueblo (1)
Española Valley Fiber Arts Center (1)
Diné student from NNMCM (1)
Ramirez Thomas Elementary School (1)
San Diego Riverside Charter School (1)
Native American Parents Advisory Group, Los Alamos Public School (1)
Jicarilla Apache Tribe (1)
Navajo Technical University (1)
Diné Bi Olta School Board Association (1)
NASA Astrobiology Program (1)
Okay Owingeh Pueblo (1)
Northern New Mexico College (1)
NM EPSCoR (1)

In terms of agenda and facilitation, it was decided that an open, facilitated discussion format through which all participants could contribute would be most beneficial, with the inclusion of a few key presentations to spur ideas and dialogue (see Appendix A for the final agenda). The core team forewent the suggestion of breaking up into smaller groups in favor of holding one, large, open space throughout the weekend. Expert facilitators, a team of two (one Native and one non-Native) from the Academy for the Love of Learning, joined the core team and helped shape the agenda.

The agenda included four presentations: a keynote address by Dr. Greg Cajete from UNM entitled ‘Science and Native Americans: Community, Education, and Technology’ (see Figure 1); ‘NASA and the Navajo Nation: A 13-year, Ongoing Collaboration;’ ‘How a Struggling School for Native Americans Doubled its Graduation Rate;’ and ‘Kha’p’o Community School: The Possibility of Tribally Controlled Schools.’ These presentations were invited to provide access to scholarship on the relationship between Native and Western science in the context of education, as well as showcase existing models of cross-cultural STEM education in Native communities in New Mexico.

The rest of the agenda was a space for open commentary and discussion of the ideas and issues raised in the presentations, as related to the overall guiding questions: Are schools, organizations, and/or tribes, either together or separately, interested in partnering with NASA or other science organizations on educational initiatives. If such partnerships are desired, how should they proceed? What values and goals should guide them? What kind of programs could be co-created?

Fruits of the Dialogue:

An extremely rich, passion-filled dialogue ensued over the two-day period of the Round Table. Participants recognized that a safe space had been created and was being held for them, and they in turn shared honestly and from their hearts. Key Words and Phrases (see Appendix B) derived from several sources of notes reveal and reflect the authenticity of the sharing.

Broadly, notes taken from four different sources during the comments and discussion were categorized into Challenges and Ways Forward (see Appendices C and D). Implicit in this categorization is an acknowledgement that participants spoke from a desire to move forward into new educational experiences for Native youth—and even new educational paradigms altogether—that are based in Indigenous science and community values...programs that could potentially bring in/weave/braid knowledge derived from other systems and methods, such as Western science.



Figure 1. Dr. Greg Cajete delivers the opening, keynote address on March 23, 2018.

The notes were parsed and coded into emergent themes:

- The dominant culture's public education system (standards, pedagogies, assessments) is a product of colonization and is not representative of Native ways of teaching, learning, and conveying values; as such, it fails Native youth.
- Many Native communities face social and economic challenges (poverty, health, substance abuse, family dynamics) that stem from colonization, historical trauma, and disenfranchisement from the systems of the dominant culture, and are still experiencing a strong state of assimilation.
- Native communities are in a crisis of permanently losing their culture and language.
- Native educators are in need of more training, access, awareness, activities, and methods to use with students.
- Education projects must privilege community and Indigenous knowledge, be community-based, and utilize Indigenous pedagogies rather than be STEM/dominant culture-based and 'include' or 'incorporate' Indigenous perspectives. Working outside the classroom, in the home, and/or in place-based ways is favorable.
- Science can reiterate cultural knowledge vs. explain/prove/validate it. Science concepts can be introduced through a cultural perspective.
- We can explore and draw from Indigenous models in action such as those shared in the presentations and via Tim Martinez's model and the work of Greg Cajete and his students.
- Native youth are ready, willing, and able to learn the knowledge and values of their culture, look to Elders for guidance and knowledge, and create and participate.
- Exploring the nature of the relationship between Indigenous and Western science – is there a fundamental incongruence or is resonance possible?

Participant contributions to the dialogue continued via a post-Round Table survey administered by NM EPSCoR. The co-conveners and facilitators were graciously allowed to contribute to the shaping of the questions posed to the participants. A report was generated by the NM EPSCoR evaluator (see Appendix E). The vast majority of the participants appreciated being part of the Round Table experience and look forward to further dialogue and next steps.

Next Steps:

Some of the richest parts of the survey are the responses to questions about perceived weaknesses of the Round Table, as well as next steps. Here are few selected comments:

"...the careful respect to allay any sense of colonialism seemed to restrict the possibility of a true dialogue that would include all voices in the search for a transformative and inclusive education, one that would not only benefit Native American children but could also inform the restrictive formula galvanized by standardized education."

"...it would be valuable to see some sites where native ideas and pedagogy and western science are integrated and what that looks like."

“...To build on the relationships... one might establish a state committee on science specific to the southwest; "Southwest Region Science Committee", to further engage educators, administrators, students, parents, and elders in the discussion on science.”

“Now that a relationship of trust has been cultivated, it seems a good next step would be to offer a venue and timeline for creative collaboration, bringing individual ideas and approaches together for periodic presentations, reflection and critical dialogue.”

In addition to these specific pieces of input to guide next steps, the consensus from the survey is that the emergent themes should be shared, and the co-conveners should plan to continue to host dialogues with the entire group and/or smaller sub-sets to examine certain ideas in depth. Several elders at the Round Table identified themselves to the co-conveners as supportive and available to participate in next steps.

Each of the themes above informs and supports the others. Going forward we will pursue how the messages and callings in these themes can be utilized toward shaping a vision and collaborative activities that support Native youth to fully express themselves as first and foremost Indigenous people, but also Indigenous scientists, technologists, engineers, and mathematicians.

Appendix A – Agenda



NORTHERN
New Mexico College



Northern New Mexico Pueblos/NASA Round Table Dialogue

23 – 25 March 2018

Buffalo Thunder Resort • 20 Buffalo Thunder Trail • Santa Fe, NM

Friday, March 23rd - Executive Lounge - 5th Floor

- 5:30pm – Arrivals
- 6:00pm – Buffet Dinner
- 7:00pm – Keynote Address, Dr. Gregory Cajete, UNM
- 8:30pm – Adjourn

Saturday, March 24th - Pueblo 3 - Hotel Lobby Level

- 8:30am – Arrivals and Breakfast
- 9:15am – Welcome, Invocation, Opening Remarks
- 9:45am – Participant Introductions
- 10:15am – Break
- 10:30am – ‘NASA and the Navajo Nation, A 13-Year, Ongoing Collaboration’
Angela Barney Nez (Diné Bi Olta School Board Association), Daniella Scalice (NASA)
- 12:00pm – Lunch
- 1:00pm - Facilitated Dialogue
- 3:00pm – Break
- 3:15pm – ‘How a Struggling School for Native Americans Doubled its Graduation Rate’*
Mikki Carroll (7-8th Grade Head of School, Native American Community Academy)
- 3:30pm - ‘Kha’p’o Community School: The Possibility of Tribally-Controlled Schools’
Michael Dabrieo (Principal, Kha’p’o Community School)
- 4:00pm – Facilitated Dialogue, continued
- 5:00/5:30pm – Adjourn

Sunday, March 25th - Pueblo 3 - Hotel Lobby Level

- 9:00am – Arrivals and Breakfast
- 9:30am – Facilitated Dialogue, continued
- 10:45am – Break
- 11:00am – Facilitated Dialogue, continued
- 12:00pm – Final Summary of Key Points, Outcomes, and Next Steps
- 12:30pm – Lunch
- 1:00/1:30pm – Adjourn

Luciente, Inc.



* <http://hechingerreport.org/struggling-school-native-americans-doubled-graduation-rate/>

Appendix B – Key Words and Phrases

We acknowledge these words and phrases are taken out of context, and not all comments are fully represented. They appear in the order they were voiced throughout the weekend.

Service	Culture stolen and used against us
Opportunities	Love of learning is fundamental
Story	Sacred
Community	What is OK to share?
Access	Starts in the home
Lens	Multiple traditions in one lesson
STEAM	Core values
Weave	Mutual respect
Reclamation	Reciprocity
Preservation	Sustainability
Cultural Violence	Art
Braid	Cultural teachings from the womb
Love	Loss of culture/language is greatest challenge
Youth empowerment	Vision for tribal schools – exclusive
Respect Indigenous knowledge	Still in a strong state of assimilation
Thrive	Critical/analytical thinking skills are good
Decolonize	Native way – leave things whole
Indigenize	Cultural violence
Recommunitize	Curriculum of peace is needed
Relational	Cultivate natural curiosity
Authentic	Water
Reciprocal	Cultural survival
Curriculum politicized	Farming
Standardized testing	Agriculture
Culturally-responsive	Traditional medicine
Dual-learning	Respect is earned
Co-create	Tribal politics
Diversity of Natives	Reciprocity
Liberate ideas	Youth have Native pride
Abandon assumptions	Science reiterates Cultural knowledge vs.
Either/or – both/and	proves it
Privilege community knowledge	New stories about ourselves using
Collaborate	technology
We are spirit people first	Cultural competency for teachers
Personal pedagogy	NM Indian Education Act
Organic	Passionate
Education standards as assimilation	Tribes taking control of schools
Tribally-controlled schools	A complete person
Historical trauma	Indian education lacks resources
Western education as trauma	Co-design

Integrate
Balance
Kids are ready; we may not be
Relationship with land
Respect the Earth
Youthful wisdom

Transformative
PTSD from education system
Radical
Stewardship
Advocacy
Shift terminology toward energy of thriving

Appendix C – Challenges

Native people face acute issues: education, health, social, spiritual, economic, farming, family

Curriculum has been politicized – standardized testing, federally mandated. UNM research shows these structures are not the best way to learn. Standards are NOT culturally sensitive

Different pueblos, different beliefs –diversity of Natives - how to serve all equally?

Diné/Mexican – grew up neither

Not meeting standards disadvantages students

Political/corporate focus on assessment

Can't afford status quo anymore

Fear of standards = fear of success?

Standards embody disconnection, separation

Lack of being grounded in Cultural identity results in high college dropout rate

Standards are reductionist, single-concept-based, non-holistic, perpetrated, imposed... They embody the entire history of colonization, boarding school energy

Trauma – Western education was traumatic

Loving, giving self was abused

Science, education, technology is bad because it has been used against us - trauma

Corn-game – tribes owned patent but then it went into public domain

“Disrobing” a Native person so they can function in a non-Native world

The past never dies. We have to look back into our own history. Elders were taught differently.

Loss of culture and language is the GREATEST challenge

Western education is missing the ROOT

We are still in a strong stage of assimilation

Science – cultural violence

Language loss complicated by inter-marriage

Effects of alcohol, substance abuse

Competition, money, cigarettes, alcohol – kids learn all this at sporting events

Tribal politics – jealousy, hate, anger

Broken families, suicide, drugs

Fracking, uranium, GMO seeds, water contamination, chromium blooms

Public transportation issues

The Western education system isn't going anywhere – we've forced to go through it

Kids may not be grounded in cultural, core values and may not have access to people to help them with that

NM Indian Education Act – doesn't have any teeth/enforcement, decreased funding

Affective dimension: relational world view vs. objective either/or, logic, reproducibility – are these in conflict? Conflict turns kids off

“Add-on” indigenous curriculum doesn't work

College is still so lecture based – we still have to prepare kids

Schools are failing the kids – they drop out

Schools are destroying kids' abilities to be sensitive to deeper levels of knowledge, traumatizing kids – PTSD from education!

Appendix D – Ways Forward

Raise voices to serve communities

Include young people next time

THRIVE, DECOLONIZE, INDIGENIZE, RECOMMUNITIZE!

Relational:

1. How to teach relationships with each other
2. How to address and sustain relationship with the natural world
3. How to heal our spirits

Partner in authentic, reciprocal ways

Abandon assumptions; liberate ideas

Either/or – to – both/and

Work outside classroom

Privilege community knowledge

Dual-Learning environment privileges community knowledge! In Navajo/NASA workshops, people cry, speechless, overcome by the resonances. Pre-standards; inspires and empassions...this advantages people!

When at Navajo/NASA workshop, Chelsea felt “validated” – held back tears – for the first time ever she felt the cultural/scientific sides of herself weren’t separate

Collaborate, intertwine, weave it together

Place-based education

Dual-learning provides cultural relevance *and* increases STEM identity

Dual-learning is doable – just need to identify and overcome challenges

3 T’s: Thought (values); Technology (methods); Techniques (experiential learning)

Be whole self in a community context

Many community-based projects exist that do curriculum design that addresses and goes beyond standards

Love of learning drives out fear

When you're grounded in your identity, you can learn anything

Kathy and Sharon's comments on love, holism, community and culture-based learning IS MORE POWERFUL than historical trauma and disconnection/reduction-based thinking

Science is a foreign word but not a foreign concept

Love of learning and curiosity are fundamental and from within – we are NOT reintroducing that

What are the boundaries around sharing knowledge? Look at ritual and ceremony and ask, what is NOT connected to that?

OK to share language, farming practices, star knowledge to a certain extent

Use issues as points of focus: health, etc.

Use art as assessment

Kids bring information back to home/family – lots of extra learning, and results in building community up and increasing parents/community agency as primary educators

Starts in the HOME

Multiple traditions in one activity – sometimes a kid can't participate in some part of it because of cultural boundaries...how to ensure that they don't feel left out? Honor that they can't participate and make it a teaching moment for all...give them another part to do.

Know the community you're working with...cultural liaison who can vet the activities? Better yet – CO-CREATE so all potential issues are foreseen...

RELATIONALITY is a fundamental principle of life (spider web analogy)

There is a sameness, a unity of indigenous thought that underpins diversity

Core values: mutual respect, reciprocity, sustainability

ART is a great vehicle for teaching anything

We come into our beings through cultural teachings...from the womb!

Can't learn new science stuff without grounding in culture

A vision for tribes to implement their own schools with their own funding – be exclusive – no federal money

Not impossible but super challenging

Summer camps are not sufficient – we need core, full curriculum

Exploration, critical/analytical thinking is good

Native way – leave things whole

How can we work so Native kids don't have to choose?

Cultivate natural curiosity

Kids consuming way too much popular culture. How to get them to reconnect? Listen to community. Listen to kids... Teach that so much of what they do in life IS science

Water as a thematic approach

Tim Martinez's big share:

Storytelling.

Traditional farming, climate, weather, rainfall, astronomical seasons, oral history with farmer/elders, bird migration, insects behavior, amphibians... Calendar, agriculture, water testing, soil structure, technology, implements, tools, field rows and structure, dry farming, engineering, math - # of seeds in each hole planted, field design/row crops, irrigation, water schedule...

Healthy eating, water is sacred, bless the field, bless the seed

Kids out there want to learn! We have so much knowledge to share

Traditional medicine, urine in eyes to prevent cataracts, ash from fire as a poultice to prevent/treat arthritis

Science and indigenous knowledge are BOTH important

No one knows everything, we learn everyday

Language advisory board – Tewa language program – 1 year cultural outline/lesson plans

Respect is earned – part of lifeways

Reciprocity – give and it will come back to you

Curriculum of peace

Tim's farming curriculum – a whole farming unit – identifying similarities across tribes – enhancing/empowering astronomy is another piece

How do I get back into the circle without invading cultural knowledge that cannot be shared?

Consistency – activities throughout the year – irrigation/water/farming – year round with highlight in Summer camp

Kids need tutors in the community – year round support

If you don't understand your culture, how can you help your people

Teams – build relationships for youth – will last into the future – developing leaders

Youth have Native pride now, like never before. in spite of issues, kids are strong and determined (Diné/Pueblo Solidarity – an organization)

Young people really working to encourage and express concerns to tribal council. Not afraid to speak up, hold leaders accountable. They want to pray at the waters, bathe in the springs. They're PROUD. They want to connect with traditional herbs and medicines, moon cycles – they yearn to sit with elders and hear stories.

Pojoaque survey of school kids?

Science reiterates cultural knowledge vs. explains/proves/validates

Videos, youtube – because of technology, kids are seeing other Natives doing great stuff in the world. They want to create new stories about themselves...positive stories

Introduce science concepts through a cultural perspective

Lots of content is fair game to share, introduce at an early age

Keep content broad

Teachers want cultural resources to teach – need to raise their cultural competency

UNM as a resource – meeting with communities to improve service

Students are passionate – there's been a huge transformation from dropping out to making a major commitment to learning

Push for Diné schools to adopt the NASA and the Navajo Nation curricula

Think of schools less as a place of where culture gets taught, and more as a place that catalyzes community to think differently about school/education/learning

Community and schools collaborating

What do pre-service teachers need for cultural competency?

Indigenous curriculum – sustainability

Finding Face: know thyself/identity

Finding Heart: desire, passion, what guides you

Finding Foundation: what do you stand on? Knowledge piece...

These three principles in Relationship, respect, responsibility, reciprocity

Reflection of self to self, family, community, environment/planet/cosmos

Becoming a complete person is a Process – we are The People – this is the essence of indigenous curriculum

Resources are needed - NASA is an important and valid resource

Teachers and communities coming together to co-design curriculum

Woven, braided, laced, integrate, balance

First step is the hardest. Kids are ready. We may not be.

Used NODAPL movement to energize kids to protest local electric lines issues

Teachers need tech skills to support kids to use it to express themselves

Kids want to provide input to communities

Help kids develop critical thinking abilities so they can better understand culture and science

Simplicity and peacefulness, relationship with land

Get away from struggles with English/colonized system – speak into a recorder/phone vs. write things down

Kids are way beyond – functioning at different frequencies. Cultural practice to call ancestors to sit with you. Don't let outside influence you – know who you are from inside

Kids can create their own spaces, want elders for guidance, want to share

Transformative, as well as sustainability

Affectivity in curriculum – beyond content, derivation of meaning and connection

Braiding Sweetgrass (book by Robin Wall Kimmerer) – we should look to and use the work of indigenous scholars

The fact that Native people are alive is Radical!

Science/the Overculture needs indigenous knowledge – we must be Radical!

Structure of Scientific Revolutions (book, Kuhn) – get out of going from scientific paradigm to paradigm...instead TRANSFORM science – through love

NNMC should be at the center of how this moves forward

Get kids motivated – use words like stewardship, advocacy. Change terminology toward energy of thriving, getting ahead

Even energies we can't see – this is science, too – energy of dance, spiritual practice, music... Measure this energy!

Kids breakfast/spiritual circle at Matthew's child's school – starts every day that way. This Round Table was like that...

Appendix E – NM EPSCoR Follow Up Survey Report

NM EPSCoR Activity Evaluation Report by Kirk Minnick, External Evaluator
Activity Date: March 23-25, 2018 Activity Type: Diversity-Innovation Working Group
Activity Title: “Northern New Mexico Pueblos/NASA Round Table Dialogue”
Activity Leads: Ulises Ricoy, Matthew Martinez, Richard Bailey, Jr, and Daniella Scalice

Introduction

According to the NM EPSCoR proposal, Diversity-Innovation Working Groups (D-IWG) “will bring in additional expertise to gather/synthesize information that can lead to proposals or other concrete mechanisms that will enhance the diversity among STEM students and members of the workforce

The D-IWG evaluated in this report was submitted in March, 2017. According to the project summary:

Building on 12 years of prior experience and success with the Navajo Nation and the relationship building efforts begun several years ago between NASA, Northern New Mexico College, and the constituents of the 8 Northern Indian Pueblos Council, we seek to convene a Round Table Summit with education and Cultural leaders of the Pueblo communities of Northern New Mexico, including especially youth leaders. Participants in the Summit will discuss the desirability and feasibility of establishing partnerships and pursuing educational initiatives with NASA and other science agencies and organizations. The Summit will solicit input toward determining if and how such partnerships should emerge, and will serve as a foundation for the development of guiding philosophies and principles that can shape future collaborative endeavors. It will be the next step in continuing to build trust toward the realization of a vision wherein Native youth are empowered to pursue STEM while maintaining their Cultural identities, and will lead to future collaborative proposals to co-develop and co-deliver programming for youth.

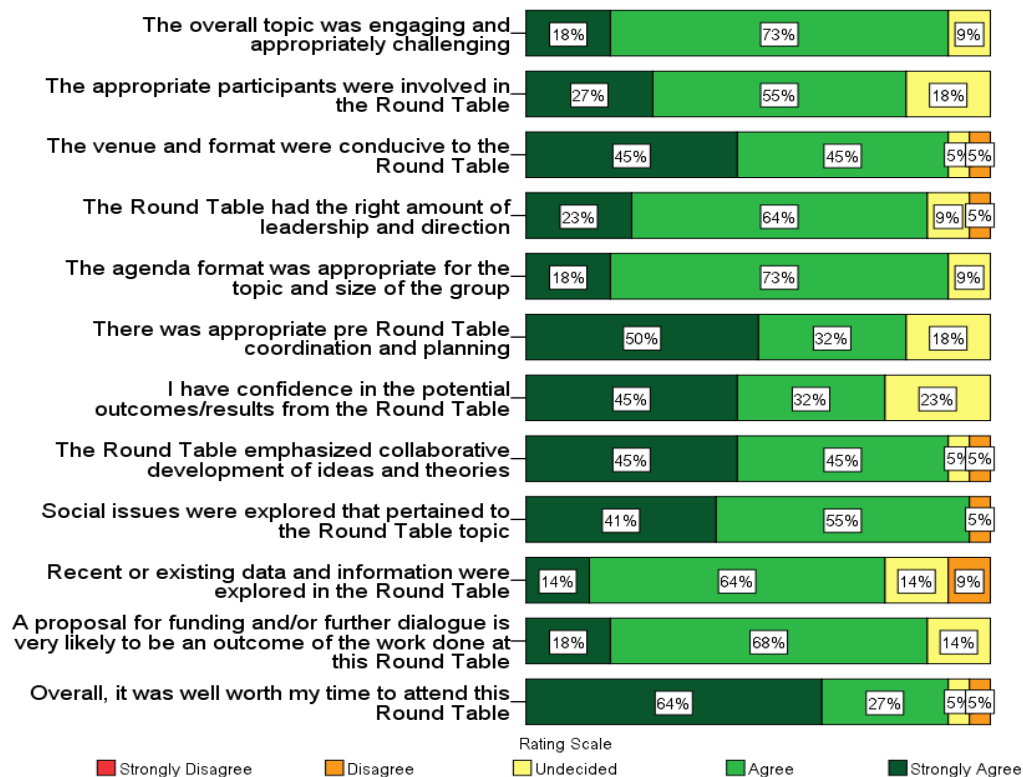
Diversity-Innovation Working Group

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Feedback

The D-IWG roundtable organizers put together a feedback survey and emailed a link out to the attendees. The survey asks the participants to provide their feedback on 12 forced choice questions regarding the workshop's organization, content and potential impact, as well as 6 open ended questions on its strengths, weaknesses, followup needed and additional comments. A question to nominate others that could contribute to the next stage was also included. Twenty-two (59%) of the D-IWG participants completed the survey. Figure 1 presents the results from the closed response questions.

Figure 1
Respondent Ratings on the Following about the D-IWG
 (Number responding=22)



The D-IWG was highly rated on all of the survey questions. Over ninety percent of the survey respondents, either 'Strongly Agreed' or 'Agreed' with the following statements: 'Social issues were explored that pertained to the Round Table topic' (97%); 'The overall topic was engaging and appropriately engaging' (91%); 'Overall, it was well worth my time to attend this Round Table' (91%).;

'The agenda format was appropriate for the topic and size of the group' (91%); 'The venue and format were conducive to the Round Table' (90%) and 'The Round Table emphasized collaborative development of ideas and theories' (90%).

The open response questions may help gain a better understanding of any underlying issues that the participants may have felt concerning the D-IWG activities and its likelihood of success. The question and their responses can be found in the appendix.

Findings

The D-IWG was held at the Buffalo Thunder Resort, outside Santa Fe, on March 23-25, 2018. A total of 37 individuals participated for one or more days of the D-IWG.

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Some of the strengths noted by participants were:

- I thought it was great to open the discussion on around science, academics, and native communities. There was a great mix of folks at the table that each brought unique perspectives.
- The round table brought in a variety of expertise and backgrounds that was effective in discussing topics, problems and potential solutions. I thought the round table also

elicited helpful commentary based on historical and contemporary issues facing science in indigenous communities.

- Creating and coordinating a formal venue and format of mutual respect and trust, which supported an internal cultural discussion to investigate approaches for a culturally sensitive pedagogy which honors tradition while invigorating interest in science.

Participants identified a few weaknesses with the D-IWG and these are listed below:

- The participants not allowed to have more smaller group discussions, the whole circle group waiting to speak was too long. i think cafe style group topics and rotation would have helped.
- I feel the format somewhat catered to individuals who feel comfortable speaking in front of groups. There were individuals that we did not hear from as a group. I think without more specific guiding questions there were a lot of cans of worms opened, which isn't necessarily a bad thing, but may have been too much to review in two days. I think there was a feeling that we should break into small groups and have discussions around sub-topics, which may have been helpful to share out ideas.
- I think the group could have benefited from some pre-work to establish a baseline of understanding for all. As well, given this was an indigenous setting, I would have felt more comfortable if we had established norms for communicating as well as open and closed each session with a blessing of some kind or prayer.
- There was not a clear and concise objective nor agenda. It was a discussion.
- From what I witnessed, the respect for protecting the group from anything that smacked of "colonialism" also prevented participation from the white invitees.

Were there any important learnings for you from the Round Table? If so, what were they?

- I still have my doubts about the want of NASA ..or outside euro-american style education to enter into the knowingness of information in sovereign nations. and why not the trust of outside scientific sources not trusting natives to develop out pathways to live by our holistic lifeways for our benefit.
- When I reflect on the experience I think my biggest learning was that "science is culture" and the predominant science we teach is the culture we teach.
- The impact the program had on the collaboration between Navajo Nation/NASA. The many ideas that emanated from the partnership
- I learned or was reintroduced due some amazing community partners who could be valuable resources in the ongoing development of curriculum around Indigenous education and science.

- The actual lesson plans shared and the knowledge of those involved. Very beneficial for myself as a classroom instructor for Native American students.

What would like to see happen next? Is there a way forward to build on the relationships we are cultivating? If so, what are those next steps?

- A tangible outcome that is solidified with a science curriculum. To build on the relationships... one might establish a state committee on science specific to the southwest; "Southwest Region Science Committee", to further engage educators, administrators, students, parents, and elders in the discussion on science.
- I would like to have money given or the means to have integrative sovereign nations only to do discussions of how Mother Earth and male and female natural laws supersedes the mentality of what constitutes the advancement of sciences without the war mentality of conquest of information.
- Present evolving themes from the Round Table discussions for individuals to choose to discuss further in depth like a group project that could be presented to the group. Each group could be given an assignment to identify how each theme could be mapped into a project such as the NASA Project with Navajo.

The following additional comments were made by respondents:

- I wish there is not a push to advance the highly scientifically youth or minds to go toward..career in the military operated national laboratories or US Gov. agencies. We need our minds, hearts and spirits to be left intact or encouraged to service our beloved communities in sovereign nation lands.
- I big thank you to everyone!! Daniella thank you for allowing for me to join. I wish nothing for the best for everyone and thanks for the work and commitment that you all are doing for students in our local communities/schools.
- At the next session I would recommend: 1) Reflect on the previous Round Table discussion. 2) Present identified themes from previous Round Table discussion 3) Have individuals choose themes of their interest to discuss further as next steps. 4) Have each theme group choose one person in their group to present their discussion for next steps. 5) Choose 2-3 individuals to draft up next steps from the theme group presentations for the next Round Table discussion.

Recommendations

This is appeared to be an excellent IWG on Diversity with representation for many different communities engaged in exploring the issues revolving around science, Native culture and

sovereign nations. A followup Round Table with specific goals and objectives may be appropriate in the next six to nine months.

APPENDIX

What did you feel were the strengths of the Round Table?
strengths were presentations of what was done and how done in sovereign nations
Teachers from the classroom giving feedback.
The diversity of the group
Sharing of information by participants.
I thought it was great to open the discussion on around science, academics, and native communities.
There was a great mix of folks at the table that each brought unique perspectives.
The round table brought in a variety of expertise and backgrounds that was effective in discussing topics, problems and potential solutions. I thought the round table also elicited helpful commentary based on historical and contemporary issues facing science in indigenous communities.
Creating and coordinating a formal venue and format of mutual respect and trust, which supported an internal cultural discussion to investigate approaches for a culturally sensitive pedagogy which honors tradition while invigorating interest in science.
We had the opportunity to meet face-to-face, not just "sit and get."
The presenters
The diversity of the group in terms of gender, race, geographical diversity, occupational differences etc
The knowledge in the room was exceptional.
I really like to lesson plans shared by you and given to my principal. I have read through them and already am considering some lessons for my classes next year. Kudaa, thank you!
I felt that there was so much knowledge in the room that it felt great to hear everyone sharing and giving their input into the discussions.
I was unable to attend Saturday, which was probably the richest day for content. My reflections are therefore based on incomplete information. Having said that my sense was that the strength of this roundtable was to provide an arena for Native American educators to voice concerns and ideas about the integration of a science into their curriculum. Recognizing the omnipresence of the scientific worldview, the question was how to include the analytical mindset of science, which is intrinsically incongruous with their cultural epistemologies, without compromising their cultural integrity.
The openness and patience of facilitators.
Acquaintance of participants leading towards collaborative professional partnerships and resources.

What did you feel were its weaknesses?

Weaknesses were the participants not allowed to have more smaller group discussions, the whole circle group waiting to speak was too long. i think cafe style group topics and rotation would have helped.

Not sure I did not attend full session, only my scheduled appearance.

None except for the sound system or lack thereof.

I feel the format somewhat catered to individuals who feel comfortable speaking in front of groups. There were individuals that we did not hear from as a group. I think without more specific guiding questions there were a lot of cans of worms opened, which isn't necessarily a bad thing, but may have been too much to review in two days. I think there was a feeling that we should break into small groups and have discussions around sub-topics, which may have been helpful to share out ideas.

At time, the round table was working off of a lot of anecdotal evidence and experiences instead of examining hands on literature or quantitative data. It would have been nice, as a table, to discuss a document or text that proposed possible ideas. I think the group could have benefited from some pre-work to establish a baseline of understanding for all. As well, given this was an indigenous setting, I would have felt more comfortable if we had established norms for communicating as well as open and closed each session with a blessing of some kind or prayer.

Because I was not present on Saturday, which was likely the day of the richest content, I feel that my observations are based on only partial information and therefore should be taken lightly. Having said that, I will offer my sense that the careful respect to allay any sense of colonialism seemed to restrict the possibility of a true dialogue that would include all voices in the search for a transformative and inclusive education, one that would not only benefit Native American children but could also inform the restrictive formula galvanized by standardized education.

Weekend timing

The acoustics of the room.

There was not a clear and concise objective nor agenda. It was a discussion.

I only found the introduction presentation by Dr. ____ from Santa Clara Pueblo somewhat typical of the pueblo people. I feel that we have come much further than what he spoke of but the discussion it led to was worth the time.

From what I witnessed, the respect for protecting the group from anything that smacked of "colonialism" also prevented participation from the white invitees.

Lack of clear destination or outcome desire.

Were there any important learnings for you from the Round Table? If so, what were they?
yes, I still have my doubts about the want of NASA ..or outside euro-american style education to enter into the knowingness of information in sovereign nations. and why not the trust of outside scientific sources not trusting natives to develop out pathways to live by our holistic lifeways for our benefit.
The ideas that I feel could be the development of a project like a science textbook or scientific curriculum specific to include NASA
I am glad to know educators in charter schools, BIE, and Public Schools continue to express concerns about the personal, social, and information processing needs of Native American communities
Yes. Several of the tribal groups who attending the Round Table workshop had either implemented or is in the process of implementing projects that have curricula aligned to STEM that are culturally appropriate and relevant to their tribal group. Example: Tim Martinez's presentation of their farm project with a curriculum he developed.
When I reflect on the experience I think my biggest learning was that "science is culture" and the predominant science we teach is the culture we teach.
I learned or was reintroduced due some amazing community partners who could be valuable resources in the ongoing development of curriculum around Indigenous education and science.
It was interesting and inspiring to meet so many engaged and passionate educators and to learn about their vision and efforts for a better world.
Regardless of our affiliation, it is important to be accepting of everyone's ideas and feelings regarding education and marginalization of students.
The impact the program had on the collaboration between Navajo Nation/NASA. The many ideas that emanated from the partnership
Yes, in the manner that people see things, we all see things through a different lens.
The actual lesson plans shared and the knowledge of those involved. Very beneficial for myself as a classroom instructor for Native American students.
I am a strong believer in language immersion in our children's everyday learning. Our pueblo children our no longer speaking their home language and exposing them to the language as much as possible is important. It was great to hear about the transformation of the Santa Clara Day school and how they are now operating.
This can be done. I liked the examples.
1) Interest by participants to develop a culturally appropriate and responsive science curricula. 2) San Idelfonso Pueblo developed and implemented an extensive agricultural program that encompassed traditional pedagogical methods of cultural history, knowledge, language, spirituality, cosmic relationships, and etiquette. 3) Sharing data with transparency. 4) Harmony of participant's interest in the subject matter. 5) Navajo/ NASA partnership in developing the Science books. Awesome! Wish it was a textbook that could be state adopted. I would still like to see that.

What was the most valuable to you personally about the Round Table?
most valuable was the knowing that we do not need validation from outside that we have the connectivity of survival when the outside sources go too extreme in control over natural laws.
The plethora of ideas generated from the discussion
Visiting with persons who share common concerns with that impact our entire nation.
Becoming acquainted with professional resources and collaborative partnerships.
Honestly, getting all those folks around the same table was so important, and it needs to happen again and consistently. We have great minds in this work, but there is so much isolated work being done it is impossible to keep track of it all. For instance, I worked on the Navajo Nation and still never even knew such a science curriculum existed.
I found the dialogue valuable at times. Specifically, I found in valuable when we were given the opportunity to discuss tangible solutions to promoting and developing indigenous or native thought and adapting scientific doctrine and ideas to values, beliefs, and practices.
Meeting inspirational people.
Met new people :>)
The opportunity to interact with personalities from different age and racial groups
The insight people have and the openness to have such a discussion was valuable.
The craving and the drive of the round table to get things moving forward into the future of our Native American children.
I really didn't know what to expect about the Round Table but the two days of being around some very intelligent people made me think that maybe it time to teach in our community once again. Everyone showed their passion for working with our Native American students.
The networking with likeminded people.
1) My acquaintance with participants as my resources. 2) Participating on this committee along with my dissertation committee member, Dr. Gregory Cajete. That's an honor for me.

What would like to see happen next? Is there a way forward to build on the relationships we are cultivating? If so, what are those next steps?

I would like to have money given or the means to have integrative sovereign nations only to do discussions of how Mother Earth and male and female natural laws supersedes the mentality of what constituents the advancement of sciences without the war mentality of conquest of information.

A tangible outcome that is solidified with a science curriculum. To build on the relationships... one might establish a state committee on science specific to the southwest; "Southwest Region Science Committee", to further engage educators, administrators, students, parents, and elders in the discussion on science.

Another meeting to discuss next steps in relative to directions needed for improving conditions in Native American Country.

Present evolving themes from the Round Table discussions for individuals to choose to discuss further in depth like a group project that could be presented to the group. Each group could be given an assignment to identify how each theme could be mapped into a project such as the NASA Project with Navajo.

I think there needs to be a "Stage 2" with a compilation of the findings from these days and some concrete guiding questions to move us forward. If we could meet again in a similar fashion (maybe not on the weekend!) but with more small group and more "goals" it could be powerful.

I'd like to have the opportunity to have time meeting with others who want to pursue curriculum planning as a means of addressing some of the issues talked about. As far as relationships, perhaps it would be valuable to see some sites where native ideas and pedagogy and western science are integrated and what that looks like. Furthermore, building the need for education to be community based - having small discussion to look at community issues and how a partnership with NASA helps to develop a curriculum to address those issues.

Now that a relationship of trust has been cultivated, it seems a good next step would be to offer a venue and timeline for creative collaboration, bringing individual ideas and approaches together for periodic presentations, reflection and critical dialogue.

Reconvene in about one year from now to share a continuation of ideas

We need to have a goal in mind and points along the way to verify we are doing the work needed to have success within the classroom.

Will there be another meeting of the Round Table? I would like to attend as I did miss some of the first meeting. Moving forward is the only way to go.

It would be great to continue building on the relationships that are coming together!

I would like to see a plan outlined and active steps taken.

Please nominate others that feel they could contribute to the next stages.

Roz Carroll-Jicarilla Administrative Department of Education (JADE)

Dr. Arrow Wilkinson, Superintendent at Walatowa High Charter School located at the Pueblo of Jemez. Telephone #575-834-0443

Danielle Martinez, Assistant Principal of Cultural Integration and Community Engagement, dmartinez@khapseducation.org Kim Gonzales, Special Education Director, kgonzales@khapseducation.org More students!

Pat McCabe - Woman Stands Shining - lives in Taos.

<https://www.youtube.com/watch?v=OeeAMNxuqio>

Superintendents and Governors feedback on the direction they want to pursue and the defined goals.

Amanda Waldschmidt

Comments?

I wish there is not a push to advance the highly scientifically youth or minds to go toward. career in the military operated national laboratories or US Gov. agencies. We need our minds, hearts and spirits to be left intact or encouraged to service our beloved communities in sovereign nation lands.

Neat and meaningful conference. Enjoyed Dr. Cajete and the dialogue that transpired.

At the next session I would recommend: 1) Reflect on the previous Round Table discussion. 2) Present identified themes from previous Round Table discussion 3) Have individuals choose themes of their interest to discuss further as next steps. 4) Have each theme group choose one person in their group to present their discussion for next steps. 5) Choose 2-3 individuals to draft up next steps from the theme group presentations for the next Round Table discussion.

Much appreciation for all the effort that went into planning and facilitating this wonderful event. Thank you for inviting me to participate!

Great opportunity to be part of a groups with new and innovative ideas. Was impressed with the Charter School at the Santa Clara Pueblo.

Overall it was a great discussion by passionate personnel.

Was great and I hope this will continue and move forward and become beneficial to our Native American children.

I big thank you to everyone!! Daniella thank you for allowing for me to join. I wish nothing for the best for everyone and thanks for the work and commitment that you all are doing for students in our local communities/schools.