



From ideas to implementation:

Sharing experiences from projects applying culturally responsive evaluation

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Introductions

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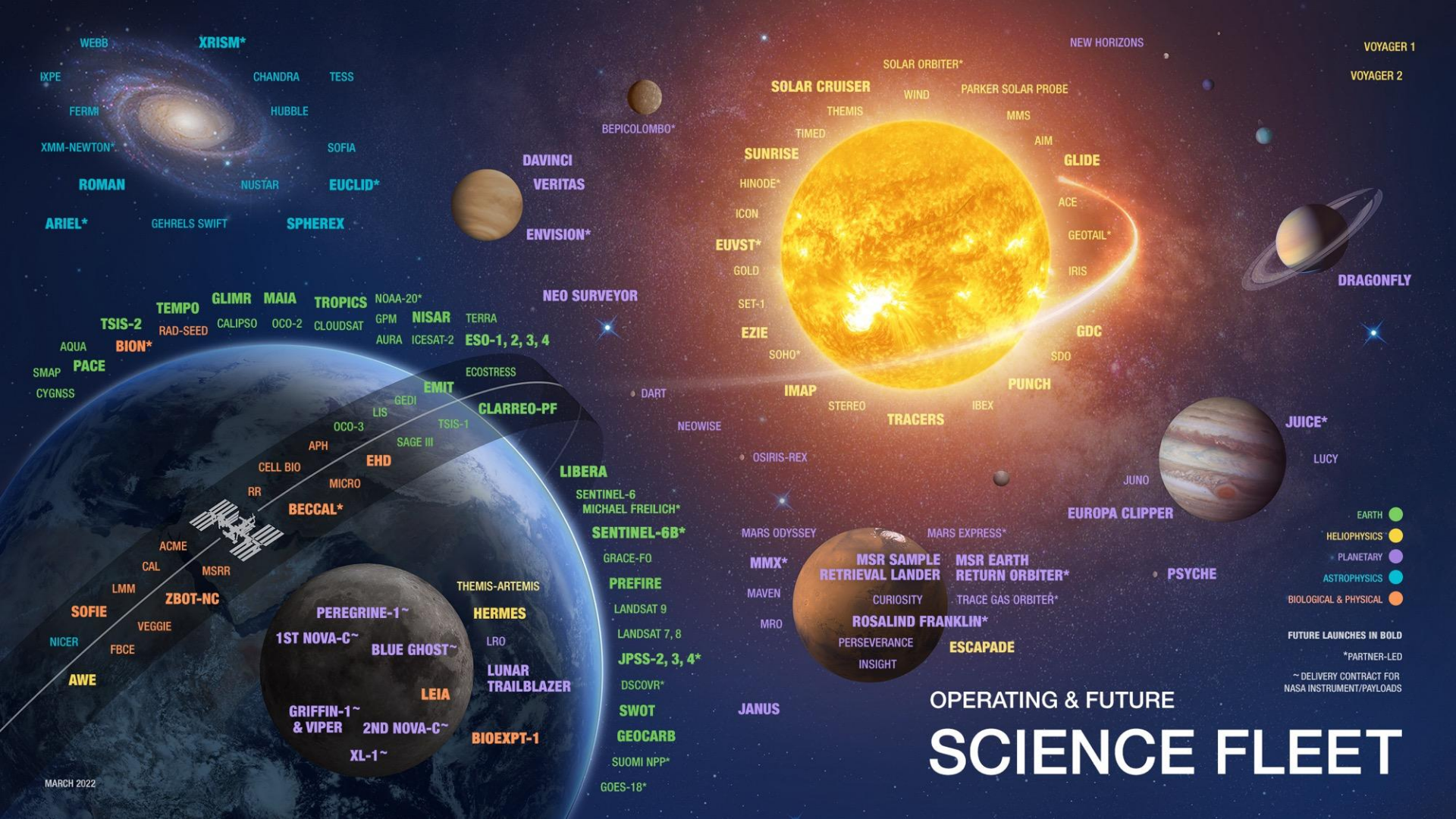
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WestEd



Agenda

- Overview of culturally responsive and equity-focused evaluation
- Project examples
 - SciAct STEM Learning Ecosystems
 - Learning Ecosystems Northeast (LENE)
 - NASA's Neurodiversity Network (N3)
- Connections Activity
- Questions



WEBB
XRISM*
IXPE
FERMI
XMM-NEWTON*
ROMAN
ARIEL*
CHANDRA
TESS
HUBBLE
SOFIA
NUSTAR
EUCLID*
GEHRELS SWIFT
SPHEREX

DAVINCI
VERITAS
ENVISION*

NEO SURVEYOR

TEMPO
GLIMR
MAIA
TROPICS
NOAA-20*
GPM
NISAR
TERRA
ICESAT-2
ESO-1, 2, 3, 4
AQUA
BION*
RAD-SEED
CALIPSO
OCO-2
CLOUDSAT
AURA
ECOSTRESS
SMAP
PACE
CYGNSS

CLARREO-PF

LIBERA

ACME
CAL
MSRR
LMM
ZBOT-NC
VEGGIE
FBCE
AWE
NICER
SOFIE
PEREGRINE-1~
HERMES
LRO
LUNAR TRAILBLAZER
1ST NOVA-C~
BLUE GHOST~
LEIA
GRIFFIN-1~
& VIPER
2ND NOVA-C~
XL-1~
BIOEXPT-1

SENTINEL-6
MICHAEL FREILICH*
SENTINEL-6B*

PREFIRE

SWOT

GEOCARB

SUOMI NPP*
GOES-18*

SOLAR CRUISER

SUNRISE

EUVST*

EZIE

IMAP

MMX*

MAVEN

JANUS

SOLAR ORBITER*
WIND
PARKER SOLAR PROBE
THEMIS
TIMED
Hinode*
ICON
SOHO*
STEREO
NEOWISE
OSIRIS-REX
MARS ODYSSEY
MARS EXPRESS*
CURIOSITY
TRACE GAS ORBITER*
PERSEVERANCE
INSIGHT

MSR SAMPLE RETRIEVAL LANDER
MSR EARTH RETURN ORBITER*
ROSA LIND FRANKLIN*
ESCAPADE

TRACERS

PUNCH

EUROPA CLIPPER

PSYCHE

GLIDE

GDC

IBEX

JUNO

EUROPA CLIPPER

PSYCHE

JUICE*

LUCY

DRAGONFLY

VOYAGER 1

VOYAGER 2

EARTH ●
HELIOPHYSICS ●
PLANETARY ●
ASTROPHYSICS ●
BIOLOGICAL & PHYSICAL ●

FUTURE LAUNCHES IN BOLD
*PARTNER-LED
~ DELIVERY CONTRACT FOR NASA INSTRUMENT/PAYLOADS

OPERATING & FUTURE SCIENCE FLEET

What is your experience with culturally responsive and/or equity-focused evaluation?

Are you...

- Regularly incorporating culturally responsive or equity-focused evaluation practices?
- Familiar with frameworks and incorporating some practices in your work?
- New to thinking about culturally responsive or equity-focused evaluation?

Frameworks

<https://slp4i.com/matrix/>

- **Culturally Competent Evaluation:** Leading with self-reflection and cultural competence
- **Culturally Responsive Evaluation:** Centering culture in evaluations by including community members and evaluators with direct lived experience
- **Culturally Responsive and Equitable Evaluation:** Aiming for equity through culturally responsive approaches
- **Culturally Responsive Indigenous Evaluation:** Striving for sovereignty and self-determination
- **Empowerment Evaluation:** Empowering communities with tools used for self-determination
- **Equity-focused Evaluations:** Conceptualizing, conducting, and using evaluation in service of equity
- **Transformative Evaluation:** Fighting for human rights and social justice using mixed methods

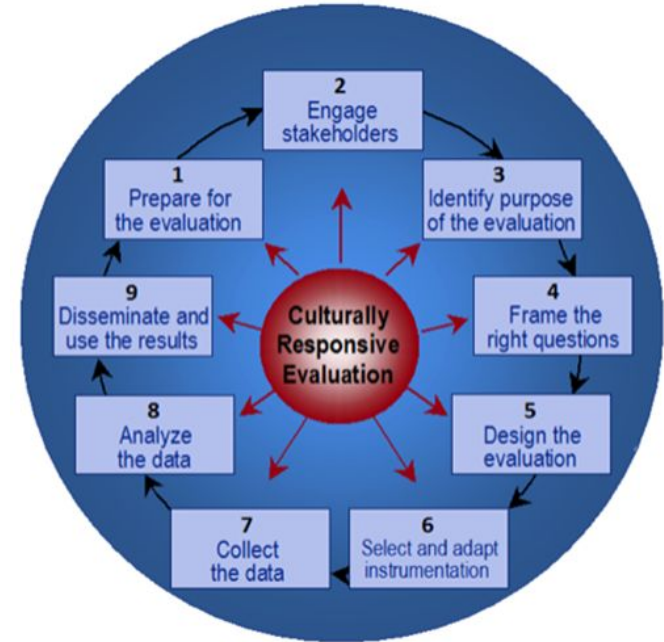
Principles

<https://slp4i.com/matrix/>

- Promotion of equity and social justice; attendance to issues of **power**
- Engagement of **partners and community members**, particularly those with less social power, during all phases of the evaluation
- Composition of evaluation **team** and reflection on assumptions and biases
- Consideration of cultural and historical contexts and different **worldviews**
- Intentional **methods** and thoughtful data collection
- Intentional **analysis** and inclusive interpretation
- Accessible and actionable evaluation **findings**

Defining Culturally Responsive Evaluation (CRE)

- CRE is a holistic framework that recognizes that culture is central in all evaluation
- Asks evaluators to recognize the values, beliefs, and culture that they bring to their work as well as the context in which the evaluation is taking place
- Recognizes the power imbalances that are inherent to evaluation and favors the cultures and viewpoints of groups that have been historically marginalized

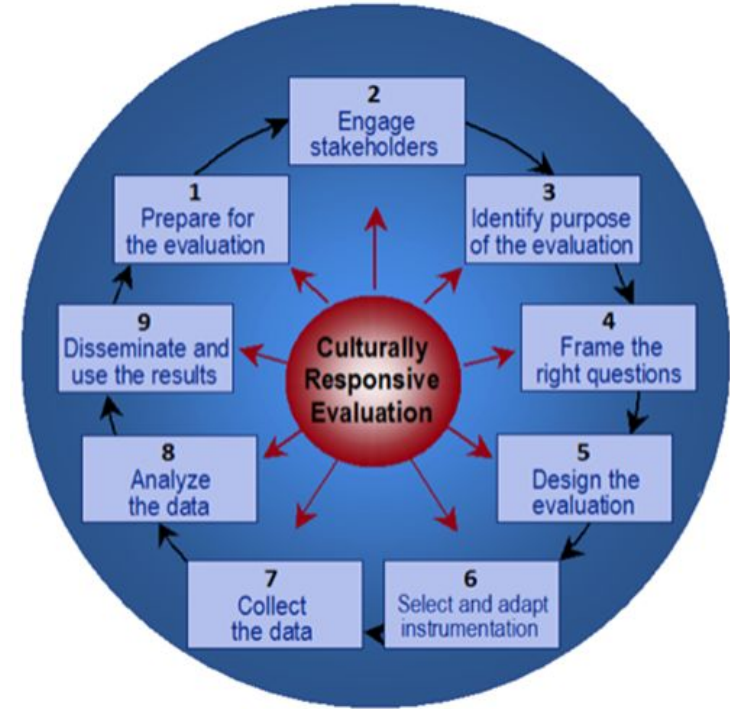


Reflect & Share

Choose one stage of evaluation and think about how it relates to your work.

- What are you already doing to share power or center culture in your evaluation work?
- What is one thing you could commit to incorporating in a current or upcoming project?

Share and discuss with others.



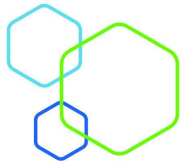
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Resources

- Frierson, H. T., Hood, S., & Hughes, G. B. (2010). A guide to conducting culturally-responsive evaluations. In J. Frechtling (Ed.), *The 2010 user-friendly handbook for project evaluation*. Arlington, VA: National Science Foundation.
- Hood, S., Hopson, R. K., & Kirkhart, K. E. (2015). Culturally responsive evaluation: Theory, practice, and future implications. In K. E. Newcomer, H. P. Hatry & J. S. Wholey (Eds.), *Handbook of practical program evaluation* (4th ed.): Jossey-Bass.
- Bledsoe, K., Gonzales, F., & Guillen-Woods, B. (2022). The Eval Matrix©. Strategy Learning Partners for Innovation <https://slp4i.com/the-eval-matrix>.

Incorporating Culturally Responsive Evaluation Practices with Professionals

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STEM **LEARNING**
ECOSYSTEMS



Museum of Science®



SciAct STEM Ecosystems inquiry study

- Collaboration of several teams in NASA's Science Activation (SciAct) program
- **Inquiry** to learn about principles and practices of projects designed to broaden participation in STEM learning, using an *ecosystems* lens
- **Three inquiry cycles** focused different topics:
 - elements of STEM ecosystems
 - DEAIIB practices
 - authentic STEM learning



INQUIRY PROCESS

EXPECTED



● Researchers

● Project and ecosystem leaders

● Advisors

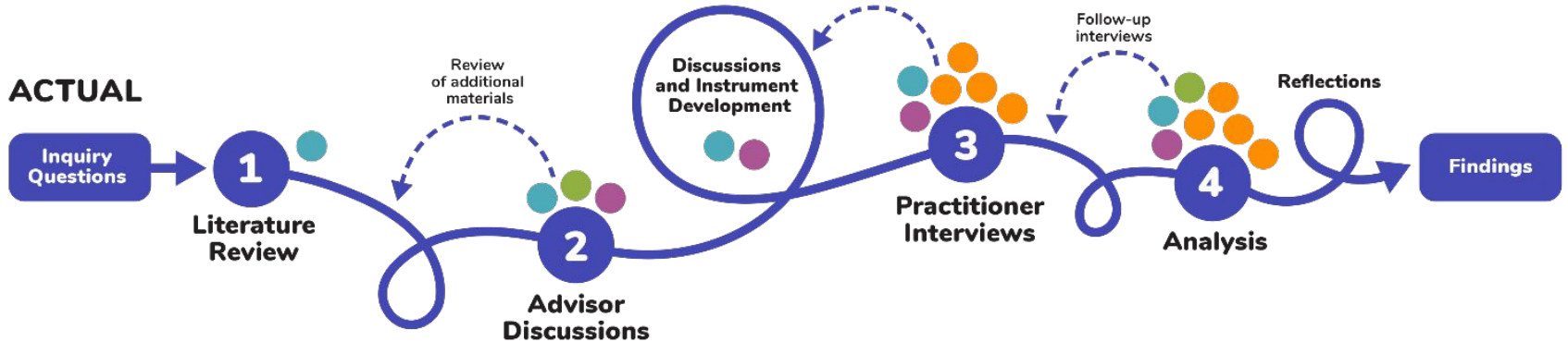
● STEM learning ecosystem practitioners

INQUIRY PROCESS

EXPECTED



ACTUAL



- Researchers
- Project and ecosystem leaders
- Advisors
- STEM learning ecosystem practitioners

Continuing our commitment in dissemination phase



Collaborative discussions around sharing findings



Opportunities to co-present findings



Co-authorship on publications

Resources

<https://www.nisenet.org/stem-learning-ecosystems>

Videos:

- What are STEM learning ecosystems?
- Introduction to STEM learning ecosystems
- Building and supporting strong partnerships
- Using equitable approaches to broaden participation
- Creating authentic STEM learning experiences

Activities:

- What is learning?
- Depict your partnership

Illustrations:

- STEM learning ecosystems



Resources



Learning Ecosystems Northeast

LENE is a network of Connected Learning Ecosystems (CLEs) committed to empowering the next generation of climate stewards by:

- Connecting in and out of school educators
- Building climate and data literacy
- Fostering strong science interest, identity, and agency
- Centering rural, Indigenous, Immigrant & Refugee communities
- Highlighting the relevance of NASA science to local communities

We wish to establish the collective ownership of the ideas, activities, and resources and emphasize that LENE is a partnership of nearly 30 researchers, practitioners, and STEM learning professionals (qmri.org/LENEContributors) all of whom contributed substantially to the work reported here.

LENE Partners



Gulf of Maine Research Institute

4-H/University of Maine Cooperative Extension

Maine State Library

Gateway Community Services

Wabanaki Youth in Science (WaYS)

12 small science centers

Education Development Center

Stanford University

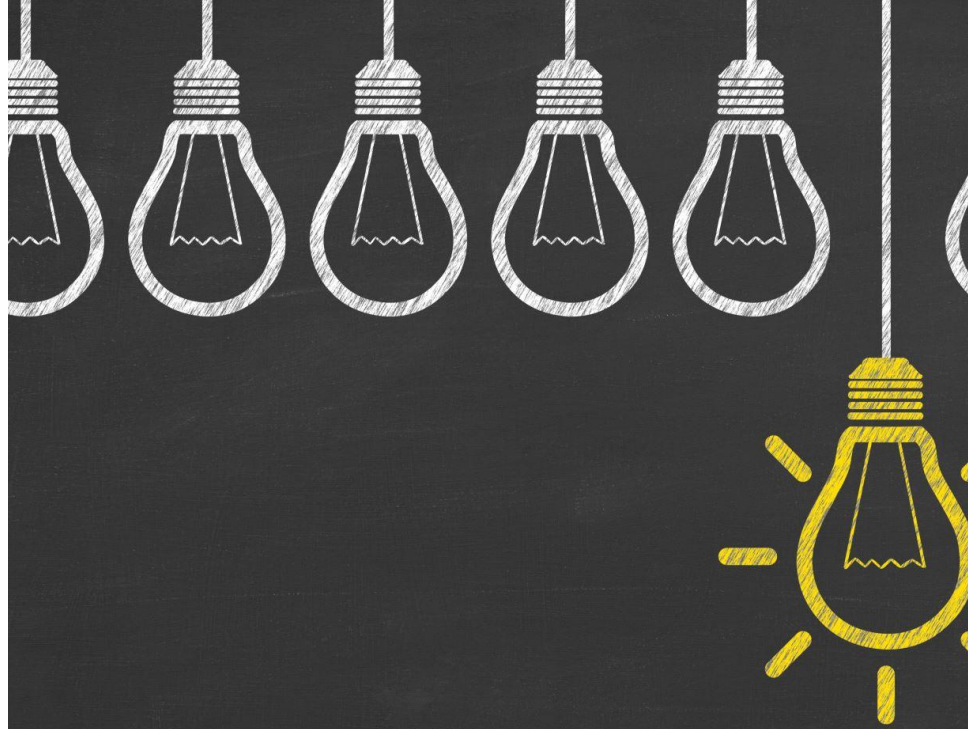
Evaluating LENE

Themes

- Local
- Relevance
- Collaboration and relationships
- Emergent priorities and process

Goals

- Document progress aligned with NASA priorities
- Feedback on key components



Example 1: CLEs in Maine

What this is:

- 5 regional communities of rural educators – classroom teachers, informal educators, librarians
- Coordinated by GMRI educators, with two “lead educators” in each region
- Focus on building connections, sharing knowledge and ideas, developing learning experiences for educators and their audiences

How we evaluate:

- Use variety of methods (observations of CLE meetings and events, annual surveys, interviews of CLE educators)
- Additional data collection in response to questions and needs from leads
- Provide regular feedback to GMRI leaders and lead educators (stories, data summaries)
- Attention to power dynamics within and across CLEs (growth of CLEs, who is and isn’t represented)

Learning Ecosystems Northeast

Community Knowledge

Sarah Sparks

One of the foundational principles of connected learning ecosystems is community knowledge; the idea that no one educator needs to have all the answers and expertise, that collectively we have all of the assets and knowledge needed to help support and engage youth in authentic and relevant STEM learning. This core belief has shown up in many ways across the project. Here is one example:

Team Teaching Model

Our partner at UMaine 4-H Cooperative Extension hosts many volunteer run youth programs. They are always on the search for volunteers who have both a background in STEM and also the skill of being able to translate that into engaging youth experiences. Through the LENE network and our collective shift toward engaging community knowledge, it became clear that instead of looking for someone who had it all, they could pair folks with highly complementary skill sets and expertise. Thus, the vision for this team-teaching model emerged as a way to both deliver top tier experiences for youth and also as a way for educators to build their confidence and sense of connection to their local educator community.

This pilot program recruited and trained librarians as 4-H Positive Youth Development (PYD) volunteers who then partnered with volunteer STEM content providers to bring special interest programming to their local libraries. The Librarians and STEM volunteers worked together to design and deliver hands-on programs at 6 libraries over the course of the summer, engaging over 128 youth. One partnership focused on bees and included experiences at a local high school bee club demonstrating bee gear, building model bees, and at the library as well, exploring their pollinator garden in connection to climate change. In another community, youth learned how to identify different Maine seabirds and how researchers count eggs and band birds for identification and tracking.

The pilot was a huge success and partners continue to look for ways to celebrate and leverage collective community knowledge.

Example 2: Butterfly Project

What this is:

- Two cohorts of teachers who work with Maine's Tribal communities
- Explore the intersection of Indigenous knowledge and Western science
- Trust and relationships
- Build connections between educators to enable new experiences and deeper connections for youth

How we evaluate:

- Relationship building with leaders
- Hired member of community as consultant – all instruments and analysis reviewed
- Use qualitative approach (participatory observations, brief surveys with open-ended questions, short interviews)



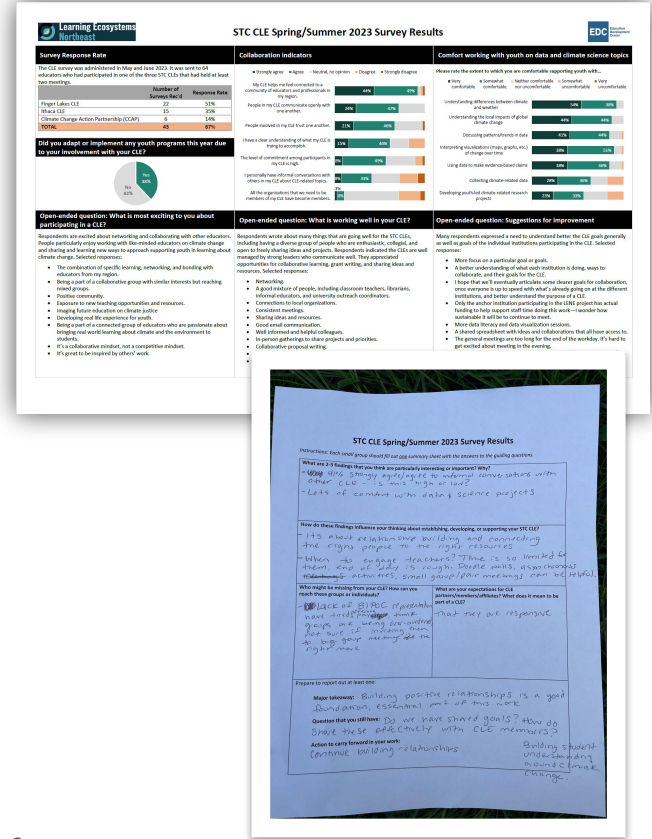
Example 3: Small science centers

What this is:

- 12 small/medium science and technology centers around Northeast
- Have Community of Practice to learn, share ideas
- Each forming their own connected learning ecosystem in their rural communities

How we evaluate:

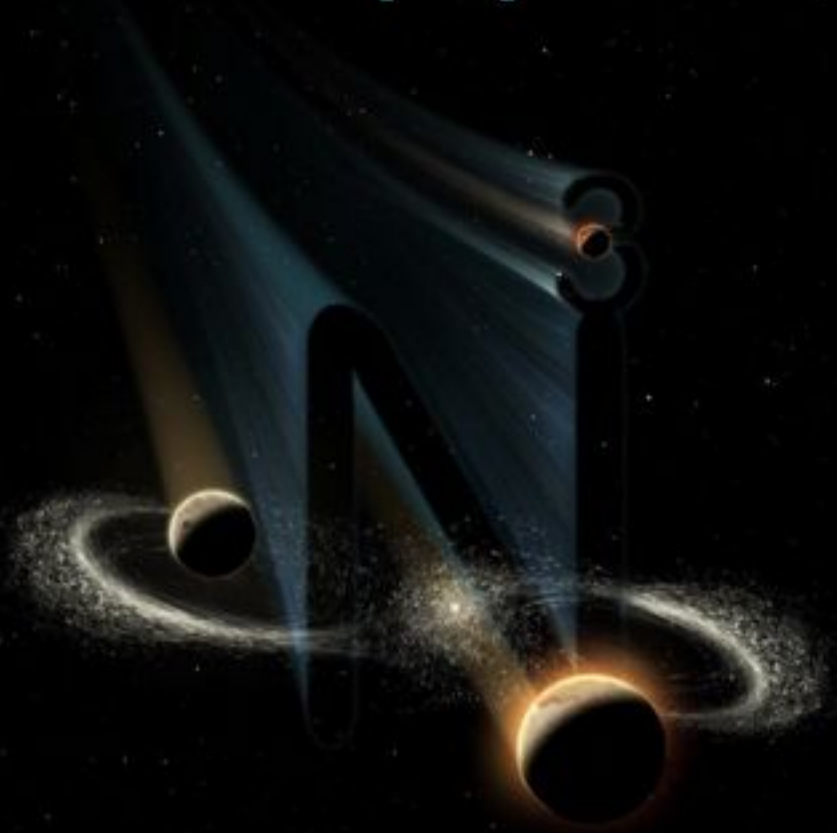
- Use variety of methods (case study approach, observations of meetings, annual surveys and interviews with leads and members)
- Share data with leaders for meaning making (e.g., data placemats)
- Attention to power dynamics within and across CLEs (growth of CLEs, who is and isn't represented)



What is NASA's Neurodiversity Network (N3)?



- Five-year program
- Main goal is to provide a pathway to NASA participation and STEM employment for neurodiverse learners
- Program aims to:
 - 1) redesign NASA resources with significant input from autistic learners and
 - 2) offers a internship program for autistic high school students



Evaluation

WestEd is the external evaluator for N3

Our purpose is to ensure N3 meets its goals



Increase neurodiverse learners'

- STEM interest and confidence.
- interest in NASA-related careers.



Increase NASA subject matter experts' experience in working with neurodiverse individuals

What kind of data do we collect?

Data sources:

- Observation notes
- Attendance records
- Interviews
- Surveys

Examples:

- Internship Showcase observations
- Interviews with interns, their parent/guardian, and their assigned mentor
- End of program survey with interns and mentors

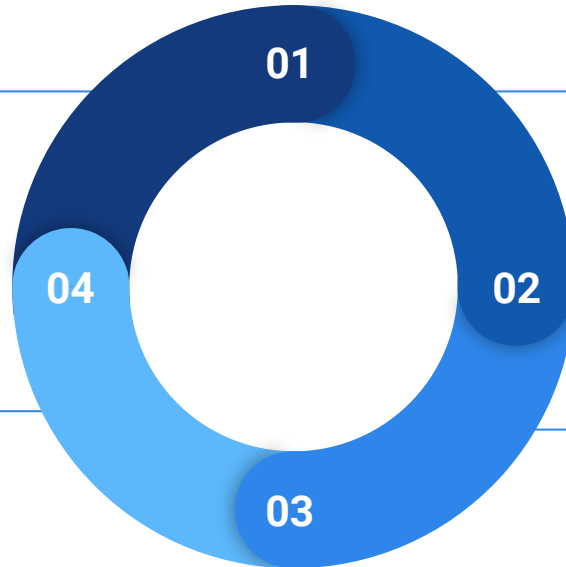
What we do (simplified)

1. Listen and learn

Evaluators attend trainings, conferences, and read books and other resources.

4. Share findings and recommendations

Evaluators meet with N3 staff to review findings. The program uses these findings to improve the program.



2. Surveys and interviews to gather information from participants

To measure if N3 meets its project goals.

3. Analyze the Data

The evaluation data is analyzed. Evaluators make notes about modifications to instruments for next year and summarize what was learned.

What kind of data do we collect?

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Examples:

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- Interviews with interns, their parent/guardian, and their assigned mentor
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Evaluation Accommodations



Modifying Instruments



**Designing Accessible
Data Collection Methods**



**Changes in Communicating
and Reporting**



Modifying Instruments – Original Student Assent Form

Evaluation of NASA's Neurodiversity Network Student Information Letter and Assent Form

What is the study about?

We are asking you to help us better understand the impact of NASA's Neurodiversity Network Program on participating autistic youth like yourself.

Your parent(s) know we are talking with you about the study. This form will tell you about the study to help you decide whether or not you want to take part in it.

Your Participation

If you say "yes" to participate in the study, you will be asked to do the following:

What you will be asked to do?	When and how often?	Why?
Fill out a questionnaire that asks you about what you are studying and hope to do in the future.	At the end of your internship and once every year till 2024.	This questionnaire will help us figure out the long-term impact of the N3 internship on autistic participants like you.
Participate in a 30-minute interview with an evaluator.	The interview will be scheduled two to three years after the completion of your internship.	The purpose of the interview is to help us figure out the long-term impact of the N3 internship on autistic participants like you.

If you don't want to be in the study, you don't have to be. It is your choice. If you choose not to participate, it will not affect any opportunities that you might have with the N3 program. Nobody will be mad if you say no. You can decide to be in the study now and change your mind later.

Confidentiality

What you share will be kept confidential. That means no one will be able to figure out what you said or did. Evaluators will never tell other people your name. No one will be able to tell who the evaluators are talking about.

Are there any risks to being in the study?

We do not think anything negative will happen if you participate in this study.

Are there any benefits?



Updated Student Assent Graphic

This form will tell you about NASA's Neurodiversity Network Program study to help you decide whether or not you want to take part in it.

Sections:



What is the purpose of the study?



If you choose to take part



Questions about participation



Next steps



What is the purpose of the study?

We are asking you to help us better understand the impact of NASA's Neurodiversity Network Program on participating autistic youth like yourself.

Your parent(s) know we are talking with you about the study.



If you choose to take part

What will you be asked to do?	When and how often?	Why?
Fill out a 20-minute questionnaire	At the end of your internship and once every year till 2024.	These activities will help us figure out the long-term impact of the N3 internship on autistic participants like you.
Be invited to participate in an optional 30 minute interview with an evaluator.	You will be invited to participate in an interview two to three years after the completion of your internship. This is voluntary, and not a required study activity.	

If you don't want to be in the study, you don't have to be. It is your choice.

If you choose not to participate, it will not affect any opportunities that you might have with the N3 program. Nobody will be mad if you say no.

You can decide to be in the study now and change your mind later.



Questions about participation

Question	Answer
Will my participation be confidential?	What you share will be kept confidential. Evaluators will never tell other people your name. No one will be able to tell who the evaluators are talking about.
Are there any disadvantages to being in the study?	We do not think anything negative will happen if you participate in this study
Are there any benefits?	If you take part in this study, you might support the development of future programming for youth on the autistic spectrum who are interested in science and astronomy.



Next steps

If you have more questions:
please email Andrew Grillo-Hill at agrillo@wested.org

To take part in the study:
please fill out the 1-page form on the next page.

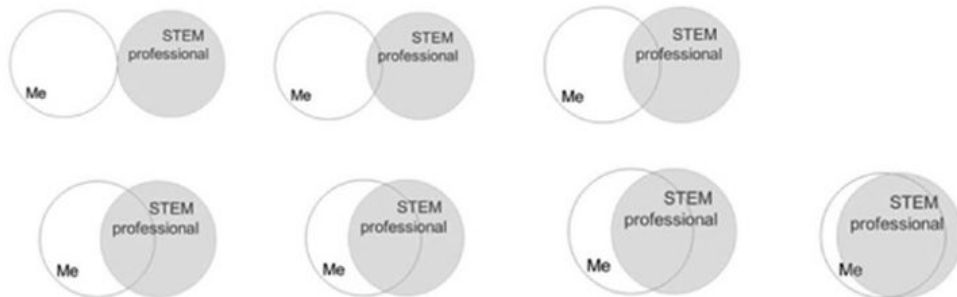


Single-Item Measure for Assessing STEM Identity, STEM Professional Identity Overlap (STEM PIO-1)

A STEM professional is a person who uses science, technology, engineering, or mathematics in their everyday work.

PRE: Think back to the time just before this program began and select the picture that best describes the overlap of the image you had of yourself and your image of what a STEM professional was.

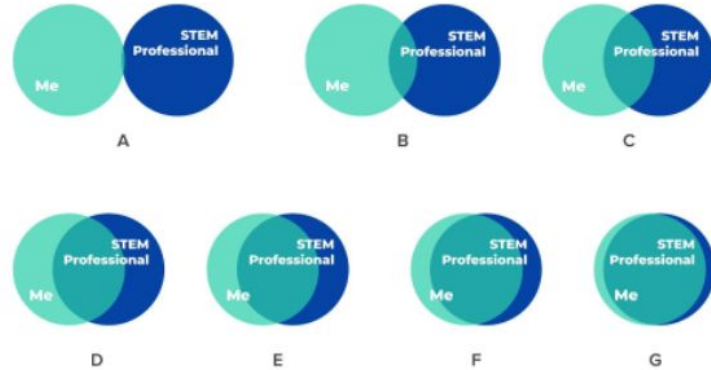
POST: Select the picture that best describes the overlap of the image you currently have of yourself and your image of what a STEM professional is.



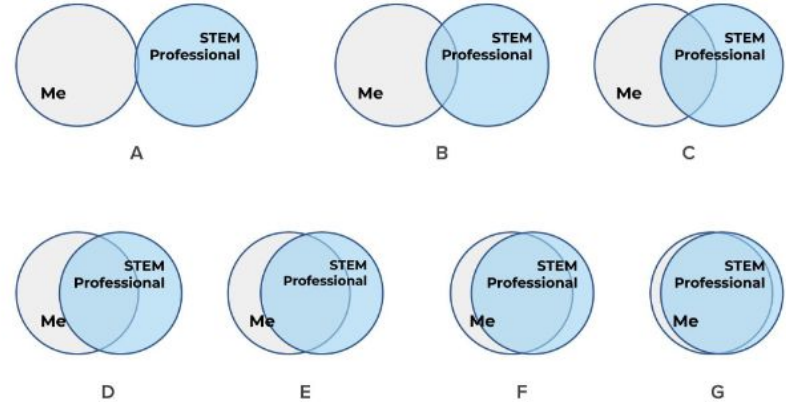


Updated STEM PIO

Digital Version



Print Version





Designing Accessible Data Collection Methods

- 1 Shorten interview duration** to a period no longer than 30 minutes.
- 2 Offer multiple options for participants to participate in an interview**, e.g., participants can participate online, in-person, synchronously or asynchronously.
- 3 Be explicit that participants may be informal** during interviews and **what this means**, vs. being in a formal job interview
- 4 Prime participants through explicit visual communication** such as the use of visuals in email templates, and through the use of priming language in email reminders.
- 5 Prime participants through explicit communication about the content of the interview** such as sharing questions ahead of time and outlining the number of questions and topics covered in each portion of the interview.
- 6 Be explicit with participants about the objective** of classroom observations and **obtaining their permission** to observe.



Changes in Communicating and Reporting

1. Shifting the language used to speak and write about autistic participants.

a. Utilize a language checklist to write and review reports:

- Would I use this language if I were in a conversation with an autistic person?
- Does my language describe autistic youth from a **deficit perspective**?
- Does my language **unnecessarily medicalize** autism when describing educational supports?
- Are we using language to speak about autistic youth that has been **approved by the autistic community**?

(adopted from Bottema-Beutel, et al., 2021)

a. Actively engage clients in conversations about perceptions and language used by program participants to describe autistic youth.



Changes in Communicating and Reporting

2.

Protecting the anonymity of participants in evaluation reporting.

a. Report about participants using a gender-neutral pronouns.

b. Remove experience-specific details in quotes that can identify the participants.

Note: as evaluators, we noticed that while these methods protect the anonymity of participants, they present a risk of suppressing gender-specific feedback and important contextual information that may help clients better understand the findings.

Making Connections

1. In this activity, we'll go around in a group, sharing and making connections around the idea of *place*.
 - One person will start, sharing **how place has (or hasn't) been important** in their life.
 - The next person will share something about place in their lives and make a connection to something the previous person said.
 - Keep going around the group.
2. When everyone has had a turn, work together to **make a representation** of your conversation to share with the other groups.

Consider: What commonalities or differences emerged? How do connections impact or inform our evaluation work?

Thank you!



**STEM LEARNING
ECOSYSTEMS**



**Learning Ecosystems
Northeast**



EDC.ORG



NASA's
Neurodiversity Network

WestEd 



Center for
Innovation
in Informal
STEM Learning
Arizona State
University

NISE
NATIONAL INFORMAL
STEM EDUCATION
NETWORK



Partner

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