



WHY CULTURAL RELEVANCY IN SCIENCE ASSESSMENT MATTERS

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Putting Montana Students First **A⁺**

BEYOND SUZY AND DAVID

The brass tacks:

- Science Assess contract with AIR and process of getting ready for field test and operational test – “Montana-ization”
- Sci Assess Item Review Process
- Teacher Participation in Item Review
- Incorporation of Montana specific standards

IEFA IS NOT BEING ASSESSED

To be clear:

The Indian Education for All that is a part of the Montana Science Content Standards is NOT being assessed.

The science standard IS being assessed

This doesn't mean you're off the hook for integrating Indian Education for All into science in a meaningful way...



It means that including Indian Education for All in science better prepares students for the science assessment.



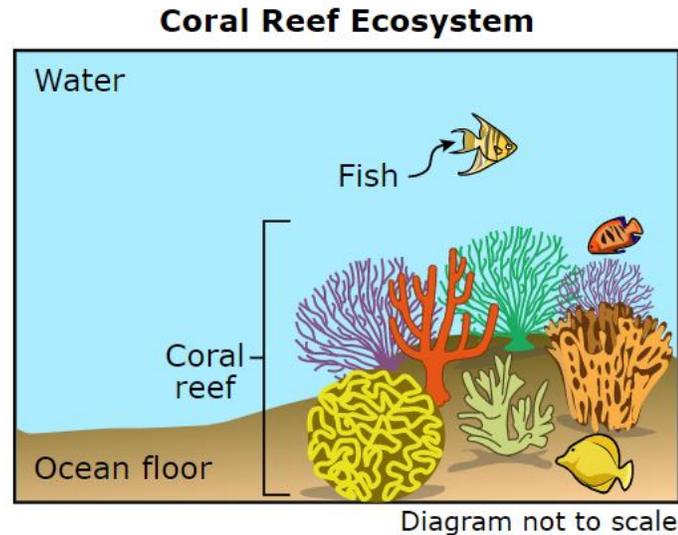
From the perspective of a student in Montana
– discuss with a neighbor which item you
think would be more “fun” to answer

Section 1—Coral Bleaching

Read the information and answer the questions.

A coral reef is made up of organisms called corals. Corals are marine animals whose skeletons form the structure of the reef. The bright colors of coral reefs are caused by algae that live inside the skeletons of the corals and provide the corals with energy.

Coral reefs provide homes for about 25% of all marine species. The Coral Reef Ecosystem diagram shows some of the organisms found in a coral reef ecosystem.



When stressed, corals expel the algae, lose their bright colors, and become white. This is known as a coral bleaching event. If the stress lasts for only a short time, the corals can recover. But if the stress lasts for a long time, the corals can starve.

Willow populations in Yellowstone National Park have increased since wolves were reintroduced to the park in 1995.

Willows are small trees that grow best in marshlike environments. After studying the Yellowstone food web shown in Diagram 1 and the population data for the park shown in Table 1, students arrive at two different hypotheses.

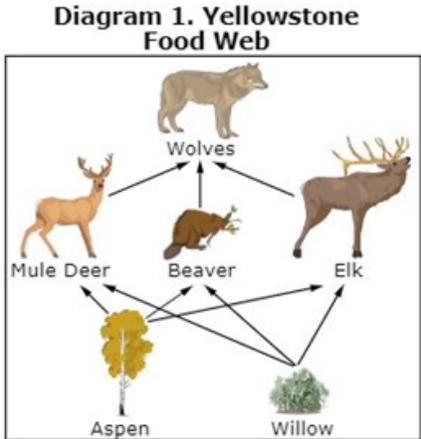


Table 1. Yellowstone Population Data

	Wolves	Elk	Beaver	Mule Deer
1995	31	16,791	10	2,014
2004	171	8,335	120	2,014

Note: These data are approximate.

Hypothesis 1:

When wolves were reintroduced to Yellowstone, the wolves preyed upon the elk, which allowed the beavers to eat more willow. This led to more beavers and beaver dams. Beaver dams create marsh environments that willows do well in, allowing the willow’s population to increase.

Hypothesis 2:

When wolves were reintroduced to Yellowstone, they preyed upon all animal species that ate plants. With fewer plant-eating animals eating willows, fewer willow plants were eaten and the population of willow plants increased.

“Achieving cultural validity in assessment means, first, recognizing that tests and assessments are cultural artifacts and the ways in which students respond to them are affected by their cultural knowledge and experiences.”

The Ongoing Quest for Culturally-Responsive Assessment for Indigenous Students in the U.S., E Trumbull, S Nelson-Barber - Frontiers in Education, 2019



Montana's strategy is Context-Adaptive:

When appropriate, we are looking for Montana-specific contexts for items. Most of these so far are place-based.

However, where a tribally specific study which has published data available, it is possible for an item to include that.

Evaluating Science Assessment Items for Bias and Sensitivity

- Are there enough supporting details so that students can comprehend the cultural content being provided?
- Do the testing materials show bias that relates to ethnicity, sex, culture, religion, class, or processes?
- Have members of different cultural groups been represented?
- Are members of different cultural groups positively portrayed?
- Have the test developers made sure that the cultural content is comprehensible to all the test takers?
- Is cultural content about the students' home culture and language accurate and up-to-date?
- Are members of different class groups positively portrayed?
- Are there traditional and non-traditional depictions of gender?

Cultural responsiveness starts in the classroom and translates into better performance for both Native and non-Native students.

What does this look like?



- 1 – Work from a culturally responsive framework in instruction as foundation;
- 2 – Ensure that there is representation in both the languages and the cultures found in your classrooms using texts, pictures, topics;
- 3 – Adopt a Social Justice lens and place student identities first and foremost;
- 4 – Use “test talk” – the same language as the test is using in the content areas so students feel familiar with the wording found on high stakes tests;
- 5 – Take a step back from the rhetoric about test scores and remember why you are a teacher;
- 6 – Talk about the tests from the first day of school. Acknowledge testing apprehension. Assure the students that they will be prepared;
- 7 – Find like-minded individuals to support you. Think outside of what you perceive *can't* be done, and negotiate your curriculum to do what you *can*.

#1 –

A Culturally Responsive science classroom might consider these four Implementation Levels for success:

Implementation Levels in K-12 Science		
Level	Meaning	Example
Social Justice	Service and/or place-based learning project involving a Montana tribe; real-world problem solving	Working with a tribe on a wetland restoration project, using tribally generated data, and tribal natural resources practices.
Transformation	Changing curriculum to include perspectives that include those of Montana Indian tribes; using curriculum from tribes; using tribal data	The 7 th grade life science curriculum contains a 1918 Influenza outbreak unit, the teacher instead teaches a unit about viruses via the smallpox epidemic in Montana in 1837. The smallpox lesson would include the development of smallpox vaccinations by Jenner and how the vaccinations were delivered to the military, trappers, and missionaries before Indians in the US territories.

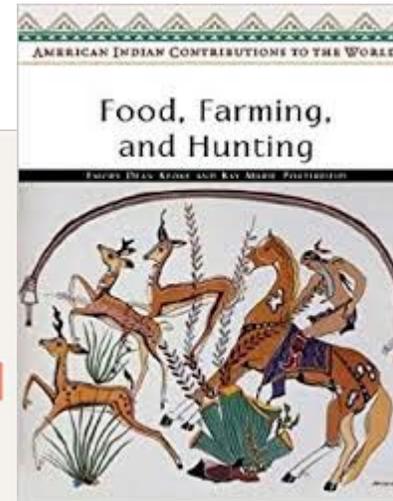
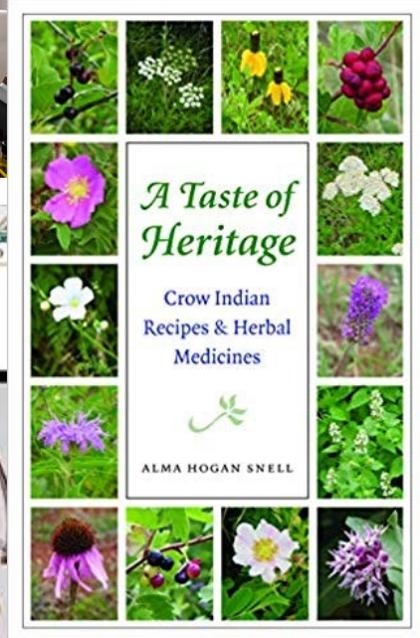


Implementation Levels in K-12 Science

Level	Meaning	Example
Additive	Adding specific information, or a book, about Montana Indians without changing the structure of the curriculum	In a 4 th grade classroom while lessons are focusing on 4-LS-1-1: Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction; one lesson includes how American Indians used animals and their body structures and behaviors to engineer technologies such as snowshoes, shapes of shelters, fishing tools, etc.
Contributions	<p>“Heroes and Holidays”</p> <p>Making mention of a person or fact, but not going into depth or, for example, celebrating American Indian Heritage Day with little or no discussion any IEFA rest of year</p>	Any and all messaging that supports the engineering and scientific feats it took to thrive in Montana year round for millennia. Consistent and positive messaging promotes the vast knowledges and intelligence of all tribes.

#2 –

Ensure that there is representation in both the languages and the cultures found in your classrooms using texts, pictures, topics.



#3 –

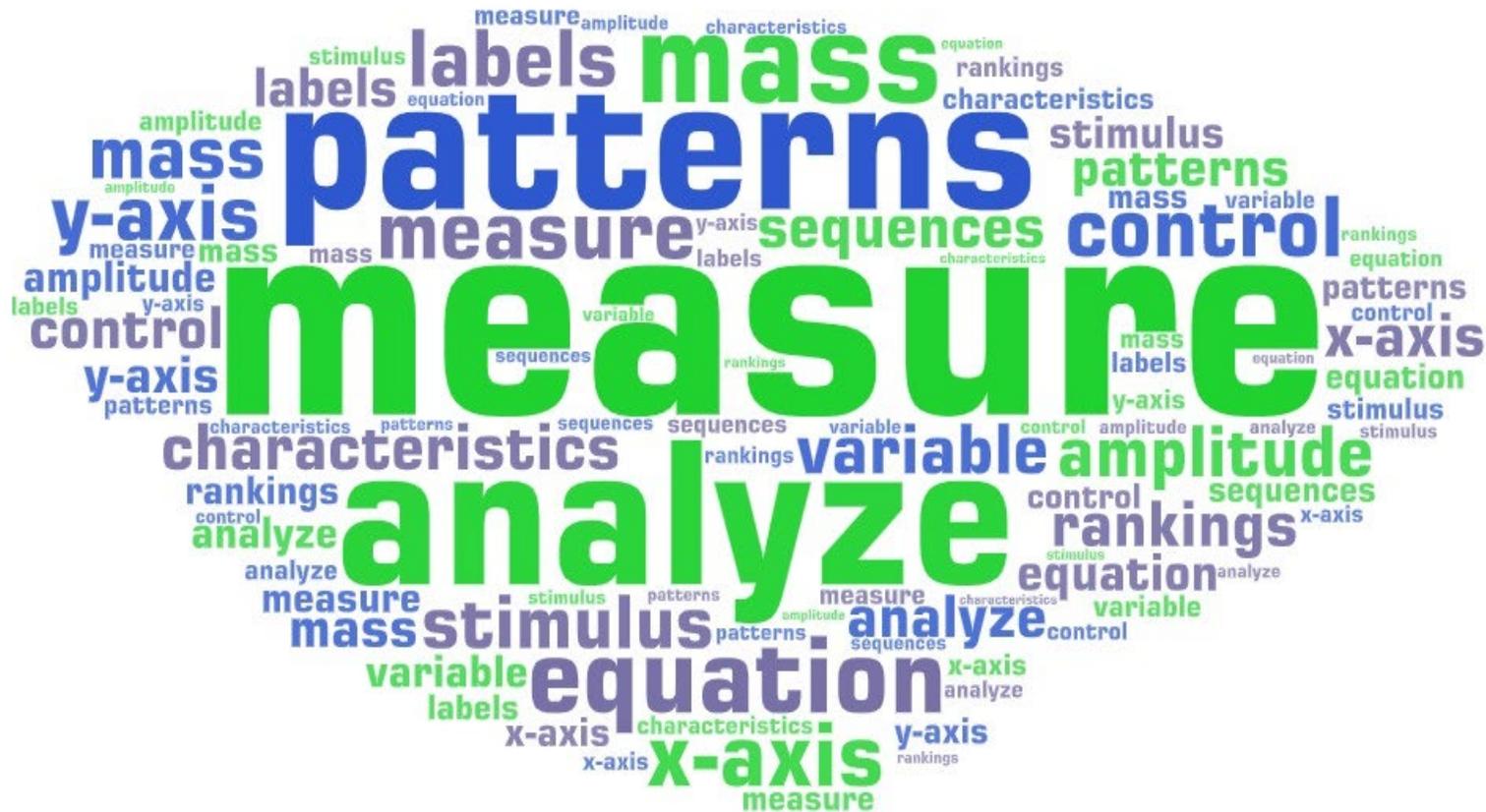
Adopt a Social Justice lens and place student identities first and foremost

1. Include the cultural capital of your students, families, and communities
2. Invest in building your own understanding of American Indian history;
3. Engage in conversations about contemporary issues, not just those of the past;
4. Leverage the available resources from OPI, tribes, NMAI
5. Use place-based curriculum, as identity is connected to place

Place student identities first and foremost

- Let them know that you see them and care about them however they might identify
- Create a safe place in your classroom for all students
- Provide representations for as many of the identities in your classroom as you can find
- Make sure all families feel welcome and included

Use “test talk” – the same language as the test is using in the content areas so students feel familiar with the wording found on high stakes tests. With regards to the science test use the 3-D language found in the DCIs, CCCs, and SEPs.



#5 –

Take a step back from the rhetoric about test scores and remember why you are a teacher or administrator – the KIDS, right? Remember your passion!



#6 –

- Talk about the tests from the first day of school.
- **Acknowledge testing apprehension.**
- Assure the students that they will be prepared.
- Remind students that there are so many other measures of success throughout the school year.

#7 –

**Find like-minded individuals to support you.
Think outside of what you perceive *can't* be
done, and negotiate your curriculum to do what
you *can*!**



**What is one thing you can take
back to your district, school, or
classroom?**



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Thank You!
Lemlts!
Pidamiya!
Pinamaya!
Miigwetch!
Aho!

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