HONORING THE WHOLE STUDENT:
Developing Space for Native American Students in STEM by Supporting Complex Identities

Dr. Christie M. Poitra, Dr. Angela Kolonich, Dr. Wendy F. Smythe and Dr. Quentin Tyler

Michigan State University occupies the ancestral, traditional and contemporary lands of the Anishinaabeg – Three Fires Confederacy of Ojibwe, Odawa and Potawatomi peoples. The university resides on land ceded in the 1819 Treaty of Saginaw.

MOTIVATION FOR THE WORKBOOK

The motivation for this workbook is to provide Science, Technology, Engineering and Mathematics (STEM) faculty the support and tools needed to reflect on their instructional, mentorship, and teaching practices—individually or within a community of learners. The goal is for STEM faculty to foster a deeper understanding of how to more dynamically support Native American students. The activities in this workbook are intended to generate conversation and reflection about the challenges faced by, and world views of, Native American STEM students.

This workbook also responds to the broader deficit narratives about Native American students. As scholars from underrepresented groups, we are committed to promoting asset-based language and narratives about Native American students. **As the workbook provides a narrow cross section of potential scenarios as thought-provoking activities, it is important to not assume that all Native American students have the same experiences in higher education, or will require the same type of support. Furthermore, it is damaging to view this workbook as all-encompassing of Native American identities and lived experiences.** Native American students are not monolithic and represent a broad spectrum of diversity—as indicated by their gender identity, ability status, tribal affiliation, regional upbringing, cultures, and socioeconomic backgrounds. **We advocate for listening to your students' needs, and problem-solving issues together when they arise.**

Considerations for Workbook Use

We envision this workbook being used by STEM faculty and academic staff interested in Diversity Equity and Inclusion (DEI) issues, with a specific focus on Native American student populations. This workbook may be used to supplement the work of faculty and academic staff already actively engaging in DEI learning. This workbook is also intended for use by individuals looking for resources on supporting Native American students, more broadly. **Lastly, we would like to highlight that engaging with this workbook requires the learner to approach these activities in an authentic and culturally humble way.**

RECOGNIZING YOUR PROFESSIONAL DEVELOPMENT
Once you have completed the workbook, please use **this link** to fill out a survey about your experiences and receive a personalized letter from the Michigan State University Native American Institute that recognizes your professional development efforts.

ABOUT THE AUTHORS

DR. CHRISTIE M. POITRA is the Interim Director of the Michigan State University (MSU) Native American Institute (NAI). Dr. Poitra is Turtle Mountain Chippewa (Pembina Ojibwa), with family ties to Little Shell. She is also a first-generation college graduate and Latina. She is an alumna of Berkeley, UCLA and MSU—and holds a doctorate in education. Dr. Poitra is an affiliate faculty member in the MSU American Indian & Indigenous Studies program, and core faculty in the MSU Gender Center for Global Context. She is also an affiliate in the MSU Bio/Computational Evolution in Action Consortium. Dr. Poitra is a scholar of Indigenous education policy and practice. Her research and service interests are defined by how policy contexts affect Indigenous education experiences—through institutional partnerships and instructional leadership. Dr. Poitra has received over a million dollars in grant funding and is the recipient of the MSU Distinguished Community Partnership Award, and MSU Excellence in Diversity Award. Prior to working in higher education, Dr. Poitra was an elementary teacher in a reservation public school, and served as a consultant for the Los Angeles Unified School District and the Bill & Melinda Gates Foundation.

DR. ANGELA KOLONICH is the Director of Professional Learning for the Next Generation Project Based Learning Initiative (NextGen PBL) in the CREATE for STEM Institute at Michigan State University. Angela is of mixed European/Anishinaabe ancestry, Giigoon Nindoodem, (Fish clan), originally from Winnipeg, Manitoba, and connected at Miskwaabekong (Red Cliff) in Northern Wisconsin. She has over 15 years of experience teaching and working in urban schools and maintains a research focus on fostering equitable science learning environments. Currently, Angela develops and facilitates sustained, teacher professional learning programs in school districts shifting to the Next Generation Science Standards, including the Detroit Public Schools Community District, and the Los Angeles Unified School District. Session topics include leveraging student funds-of-knowledge to make sense of the natural world, and positioning students as the generators of their own science knowledge. Angela's research interests are in science teacher learning, equity in science, and Indigenous science knowledge.

HONORING THE WHOLE STUDENT: DEVELOPING SPACE FOR NATIVE AMERICAN STUDENTS IN STEM BY SUPPORTING COMPLEX IDENTITIES

DR. WENDY F. SMYTHE is an Alaska Native Haida from Hydaburg, Alaska. Her Haida name is K'ah Skaahluwaa (Laughing Lady), from the Xáadas (Haida) tribe. She is Ts'aak' (Eagle) moiety of the Sdast' aas (Fish egg house) clan. Dr. Smythe is an Assistant Professor at the University of Minnesota Duluth, in the Departments of American Indian Studies and Earth and Environmental Sciences. She is a geoscientist whose research focus is on examining microbial diversity, biogeochemistry, and mineralogy of metalliferous groundwater and marine ecosystems from deep-sea hydrothermal volcanoes to hydrothermal springs in Southeast Alaska and Yellowstone National Park. She has had the honor of partnering with her tribal community over the last decade as the Director of the Geoscience Education Program, working to couple STEM disciplines with Traditional Knowledge in K-12 education by incorporating language and cultural values. She serves on the board of directors for the Xáadas Kil Kuyaáas Foundation.

DR. QUENTIN TYLER is the Associate Dean and Director for the Office of Diversity, Equity and Inclusion in the College of Agriculture and Natural Resources (CANR) at Michigan State University (MSU). As Associate Dean and Director for Diversity, Equity and Inclusion (ADDEI), Dr. Tyler provides leadership for infusing diversity, equity and inclusion principles through all areas of the CANR. Dr. Tyler very effectively focuses on creating a more multi-culturally centered environment for faculty, staff and students within CANR, AgBioResearch, and the MSU Extension; and networks with partners across MSU. His contributions and collegial spirit are highly valued by administrators, faculty, staff and students. Prior to MSU, Dr. Tyler spent over 15 years in the area of Diversity, Equity and Inclusion, serving previously in the role of Assistant Dean and Director for Diversity at the University of Kentucky College Of Agriculture. Dr. Tyler was notably the 2015-2016 National Professional President of MANRRS (Minorities in Agriculture, Natural Resources and Related Sciences) and currently serves as the National MANRRS Advisory Board Chair. Over the last decade, he has received a plethora of recognitions for his work with students and in diversity and inclusion as the National MANRRS Advisor of the Year, a Tri State Diversity Champion, University of Kentucky Inclusive Excellence Awardee and as a Game Changer by Workforce Magazine in the area of workforce management.

ACTIVITY 1

History of your Campus

Native Americans are not a large homogeneous group, rather, there are hundreds of tribes across the Nation—with distinctive cultural identities, histories, knowledges, languages, values, practices and locations. The land universities currently reside on are the traditional territories of numerous Native American tribal communities. Across the United States, Native American communities were forcibly displaced by the federal government. Land cessions coupled with federal policy resulted in larger Native American populations moving from reservations to urban areas. Today, a number of cities have urban Native American clinics and community centers.

Learning about the land that your university occupies is an important part of recognizing and respecting the Native American communities in the region, as well as becoming more knowledgeable about the world views of your students. Please take some time and use the internet to *digitally explore* the Native American communities that resided on the land before the university came to be. In the space below, make a list of tribes, and Native American centers and clinics in your state. Please note the location of these communities and organizations.

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Reflection Activity
- In researching the Native American communities in your state, what did you learn?
- How might this knowledge enhance your work with Native American students?

ACTIVITY 2

Inclusive Language

Creating an equitable and inclusive environment for the Native American students that we educate, mentor and support starts with the language we use. Additionally, the words we use when discussing Native American communities and land resources must also be respectful, inclusive and historically accurate. Inclusive language involves consciously working to find ways to credit and honor a multitude of Native American experiences, knowledge, cultures, communities and identities. Within STEM classrooms, Native American students must experience learning that speaks to their lived experiences and the intersection of their identities.

Scenario 1

A Native American undergraduate student is excited about attending their first class in your department, taught by an experienced colleague. You are a new assistant professor in the department and decide to observe the same lecture, and you and the Native American student sit near each other in the classroom. During the first lecture, the professor leading the course remarks that they have to take a quick break from the class and designates you to "hold down the fort," not realizing the historical meaning of the phrase. *Holding down the fort* feeds into stereotypes about the genocide of Native Americans in the United States. After the class, you stop by to talk to the colleague, and inform them that you had an issue with the phrase. The professor responds that you are overreacting, and any "normal" student would be fine with "such a common phrase."

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Reflection Activity
- The words that we use have the power to include or exclude individuals. What are some words that were used above that can be viewed as inclusive and exclusive? How would you respond to the colleague?
- For the list of exclusionary phrases below, what are some words or phrases that could be used instead?
  - ❍ "I informed the students that we will powwow tomorrow about next week's events."
  - ❍ "Those are my friends, my tribe, and I cannot wait to see them at the next fraternity meeting."
  - ❍ "After losing the first match in tennis, I am now on the warpath."
  - ❍ "As a Michigan Native (e.g., non-Native American person born and raised in Michigan), I have always felt that this university is my home."
  - ❍ "He is the low man on the totem pole."
- Note: There may be times when you are not aware of terms that exclude or marginalize your Native American students. Remember, learning and listening are best practice here. Working to learn forms of inclusive language is important for everyone, but there will still be things you may miss. If your Native American students approach you and provide feedback on language that you, others in class, or another colleague used that bothers them, listen and take their feedback seriously.

ACTIVITY 2 (CONT.)

Scenario 2

A Native American student, who identifies as a transgender woman, is the first person in her close-knit Native American community to attend college. She is somewhat apprehensive about being the first to attend college—particularly a large institution far from home. During a small breakout session during campus orientation, the speaker consistently refers to her and the other new students as *guys*. And states, "We are so happy to have you guys here, you guys will do a great job!"

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Reflection Activity
Please take some time to think about the potential impacts of exclusionary language on the Native American transgender woman described in the Scenario. Additionally, reflect on the importance of the other identities (gender, gender identity, gender expression, sexual orientation, family structure, geographic location, socioeconomic status) that Native American students bring with them in higher education spaces.
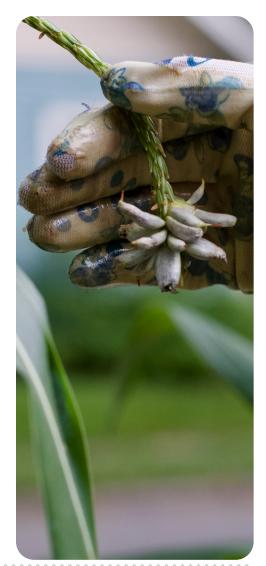
ACTIVITY 3

Mentorship

Mentoring Native American students beyond academic skills is about being a trusted source of uplifting strength and encouragement. Some Native American students come from kinship-centered communities. A mentoring relationship with faculty built on trust and rapport over time, might prove to be powerful in ensuring students are well supported and feel comfortable expressing their needs and pursuing their postsecondary education goals. Mentorship includes advocacy and support as they progress through both their professional and personal journeys, by way of formal and informal education. Mentorship also encompasses directing and supporting students in accessing relevant community and campus resources.

Scenario 1

A Native American undergraduate student is a non-traditional student and is the primary caretaker within their multigenerational family. The student remarks that they have a lot of family responsibilities, but are interested in exploring internship opportunities to prepare for their career after graduation. They are not sure how to make an internship work (because they barely have enough time to dedicate to their studies). They are feeling a little overwhelmed and discouraged because they are not at the same life stage as other college students.

Reflection Activity
What are some options you could creatively develop to provide an internship opportunity for this student (e.g., existing programs within your college, university or broader community)?

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ACTIVITY 3 (CONT.)

Scenario 2
A Native American student just moved from an urban area. They come from a close-knit urban Native American community, and their family was highly involved in the local Native American center. It is their first time living away from home. At a campus event, they make small talk with you and ask some general questions about resources on campus and in the local community. You are unsure of what types of resources they are seeking. You tell the student you will get back to them with some information about campus and the local community.

Reflection Activity 1
Please take some time to *digitally explore* campus and local community resources available to your students in the areas of:
- Campus Native American centers, affinity groups and student organizations;
- Local and urban Native American centers or other community affinity groups;
- Nonprofits serving Native American people and communities;
- Campus and National fellowship, scholarship, internship and professional development opportunities;
- Campus and local credit unions with benefits offered to students;
- Free and low-cost legal and tax clinics;
- Food pantry and food banks;
- Housing resources (e.g., information about renter's rights, housing shortages or instability, home loan down payment assistance programs; property tax assistance programs; shelters);
- Community women's resource centers;
- Campus office for persons with disabilities;
- Campus and county mental health and counseling resources;
- Low-cost healthcare services (e.g., campus, free and walk-in clinics);
- Affordable childcare services;
- Support groups for persons with addictions;
- Campus emergency loan funds;
- American Indian College Fund;
- American Indian Science and Engineering Society (AISES);
- Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS).

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Reflection Activity 2
- In researching these campus and community resources, what did you learn?
- What are some different ways you could share this information with Native American students who do not want to self-identify as Native American or their needs? Some examples are:
  - Developing a paragraph to cut and paste into your syllabus;
  - Creating a PowerPoint of services that can be used during lecture at the beginning of the semester;
  - Developing a digital welcome handout and include a link to the handout in your email signature;
  - Sharing information through an online course platform.

ACTIVITY 4

Instruction

Identifying ways to support Native American students in science requires instructors to consider familial and cultural connections and needs. Many instructional practices were based on middle-class, Eurocentric ideas about learning. Reflecting on these policies with Native American students and their needs in mind is essential to supporting their participation in STEM.

Consider a Native American student who will return to their home community to help their family with maple syrup harvesting during the spring semester. In addition to the harvest being culturally important, it also provides the student's family with a source of food and income for the year. It is difficult for the student to give you exact dates for the harvest because the timing of maple sap production is based on the seasonal shift in weather (which changes from year to year). This year, harvest has started early, and the student will be missing a week of classes. The student meets with you to ask about the consequences of their absences, and how to make up work.

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Reflection Activity
- What are some ways you might respond to the student?
- How might you make changes to your course to be more culturally responsive to the needs of Native American students?
- Review the requirements and policies within your syllabus and brainstorm ways to make them more inclusive for Native American students (e.g., course participation policy; assignments and deadlines; and lab equipment purchase and use requirements).
- Review your attendance policy with this situation in mind and consider incorporating flexibility into your policy for students in this situation. Alternatively, consider adding a sentence in your policy letting students know they can contact you in advance to arrange something.
- An example policy might include: *Our campus is beautifully diverse, with students belonging to many different communities. Should you require an absence from a class due to a cultural or community practice, ceremony or event, please email me two days prior for an approved absence.*

ACTIVITY 5

Lab Research

A Native American undergraduate student is from a rural area of the state and has asked to meet with you. The student is upset because they feel like they do not belong at the university. Describing life on campus as "too different" from what they are used to and feel as though they are "too far from home." After a few minutes, the discussion eventually moves to talking about their internship in your lab. The student is conflicted because they have been "taught specific protocols for the treatment of land, animals, and plants" and are worried they may be "expected to violate the cultural protocols" they have been taught. Their concerns about working in your lab adds to their larger feeling about not belonging at the university.

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Reflection Activity
- Ask yourself, what is making the student feel uncomfortable?
  - ○ Are there differences in cultural and community norms around learning (e.g., learning through listening and watching, versus questioning, reading, or literature review)?
  - ○ Is it environmental stressors (e.g., urban versus rural living; being at a Predominantly White Institution)?
  - ○ Is this the student's first time away from home, family, out of state or in a new setting (e.g., communal living or a dorm)?
  - ○ Is the student struggling with self-confidence in a new learning and living environment?
  - ○ Are they lacking peer support?
  - ○ Are they uncomfortable about asking questions during class, lab or fieldwork (e.g., insecurity about speaking up for fear of offending someone, of being wrong, afraid of not knowing the answer, or sounding arrogant)?
- How might you help the student feel more welcome on campus?
- What are some ways you could make your lab more inclusive for Native American students?

ACTIVITY 6

Preparation for Fieldwork

Scenario 1

Over the last several months, a Native American student has commented in class that they have limited funds to purchase the appropriate equipment for fieldwork this summer. The financial costs of fieldwork are a financial burden that the student cannot overcome, and as a result, they are considering changing their major.

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Reflection Activity
- What university or campus community resources are available to help the students with the cost of gear?
- How might you help relieve the unexpected financial burden of fieldwork?

Scenario 2

A Native American student asks to meet with you. They are from an urban area and have not spent much time in the wilderness, let alone gone camping. They reviewed your gear list and are unsure where to buy gear and do not know how to use the gear they buy. They are extremely nervous to participate in the summer fieldwork, which is required for their degree.

Reflection Activity
- How might you teach students how to use fieldwork equipment?
  - ❍ Have you provided students with direction about how to use field gear?
  - ❍ Have you considered how to provide students with resources for getting gear at a lower cost?
  - ❍ Have you considered how to accommodate students with cultural or religious protocols or disability or chronic illness, in a way that does not require the student to disclose personal details?

ACTIVITY 7

Field Research

Learning opportunities that support an asset narrative about Native American students are essential to cultivating positive learning outcomes. In part, ascribing to an asset narrative about Native American students means valuing Indigenous knowledge systems and cultural practices, particularly in the sciences where many Native American students may feel their Indigenous knowledge and cultural ways of knowing are not considered relevant.

You take your class to a research site to examine the water quality of a well-known lake near campus. You ask the students to record field notes and collect samples to determine the health of a lake. The following class period, students meet in small groups to share their field notes from the site visit. Within the small group discussions, the Native American student has shared her observations of the lake through the lens of information provided by her tribe, and her own experiences harvesting in and around the lake. Specifically, the Native American student notes the traditional plant medicines are not present at the lake shore anymore, which is a sign of environmental changes at the lake. The other students do not consider the Native American student's observations to be "real science." The group is dismissive of her ideas throughout the discussion. A couple weeks later, the class reviews the results of the samples collected from the lake and learns there is a water quality issue with the lake, and it is impacting surrounding plant life. Although the Native American students' remarks were correct, she feels upset that her knowledge of the area was not taken seriously by her peers.

Reflection Activity
- How might you intervene in this scenario?
- How might you check-in with the Native American students and other students about the dismissive behaviors and conversation?
- How might you adapt this lesson to create a space for Indigenous knowledge to be shared and considered in a meaningful way?

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ACTIVITY 8

Continued Learning

Attend a public Native American cultural event or activity on campus or in the local community.

Reflection Activity
- In what ways did you find the event similar and different to other events that you have attended?
- What did you learn about social, cultural, and community norms that may support your work with Native American students?

Thank you for actively working to support Native American students in your courses by engaging with the activities in this workbook. Consider these final questions as you work to implement what you have learned.

Reflection Activity
- How might your experience with this workbook inform your instruction, mentorship and research practice?
- How might the information you learned in this toolkit apply to other diverse students?

FURTHER READING

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HONORING THE WHOLE STUDENT: DEVELOPING SPACE FOR NATIVE AMERICAN STUDENTS IN STEM BY SUPPORTING COMPLEX IDENTITIES