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Native Knowledge 360° (NK360°) Essential Understandings Framework: Reflections Using the Five Level Evaluation Model

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Cover Page Footnote

Acknowledgement goes to the Native Knowledge 360° training program.

Implementing the Five-Level Evaluation Model for an Indigenous Perspectives Professional Development

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Native Knowledge 360º (NK360º) is a program designed by the National Museum of the American Indian (NMAI) to "provide educators and students with new perspectives on Native American history and cultures" (National Museum of the American Indian [NMAI], 2022). NMAI functions as a component of the Smithsonian Institution and shares collections of Native artifacts. The goal of this organization is to bring Native voices to the forefront of the conversation. NMAI operates three separate facilities, including the museum in the National Mall in Washington, D.C., a research center in New York City, and a cultural resource center in Maryland. One way that NMAI shares Native stories is through their NK360º professional development series (NMAI, 2022). This initiative provides educational materials, student programming, and teacher development. For the purposes of this reflection, the authors focus on a professional development session offered in January 2022. It must be noted that this was a stand-alone session that was a part of a three-session series on Indigenous women who are artists and activists. The session from January 2022 was a space for participants to hear from America Meredith, an artist and activist from the Cherokee Nation.

The session titled "Indigenous Women: Artists and Activists," was a virtual, synchronous event. In addition to sharing art from the museum's collection and contemporary children's books that amplify Indigenous voices, participants learned how to use the Essential Understandings Framework in their classroom. The Essential Understandings Framework "builds on the ten themes of the National Council for the Social Studies' national curriculum standards [to] reveal key concepts about the rich and diverse cultures, histories, and contemporary lives of Native Peoples" (Native Knowledge 360°, 2022).

The purpose of this paper is two-fold: (1) it provides an evaluation of this training utilizing the five-level evaluation model (Kartal et al., 2019) by an undergraduate student researcher (hereafter referred to as *the researcher*), and (2) it creates a space to share the outcomes of this evaluation from the perspective of the undergraduate pre-service teacher. The researcher used this process as an opportunity to practice with a methodology and to apply and reflect upon lessons learned in a synchronous, online professional development session in her classroom. For this project, the faculty mentor guided the undergraduate student researcher through the research design, data collection and interpretation, and the writing of this paper. The faculty mentor attended the training with the researcher. In a series of subsequent meetings, the faculty mentor collaborated with the researcher to work through each step of the five-level evaluation model and, eventually, to transfer the learning from the NK360° professional development workshop to the classroom. The researcher filmed and facilitated this lesson and met with the faculty mentor an additional time to reflect upon the success of the workshop through the lens of the five-level design, which will be explained in greater detail in the following section. Ultimately, the researcher's takeaway was that personal commitment to professional development and knowledge acquisition that prioritizes multicultural narratives in

general, and Indigenous stories in particular, is paramount for a strong, multicultural classroom.

Methodology

The researcher engaged in a five-level evaluation of the NK360° professional development workshop. To help ground this methodology, a brief review of this process is included below. The structure for this research design is based on a slightly adapted replication of the five-level design implemented by Kartal et al. (2019). The five levels are noted in the following paragraph. Their study sought to evaluate a professional development program by using a new evaluation perspective. They included a voluntary participant sample of eighteen middle school science teachers and their students. Through the implementation of this five-level design, the researchers found that the participants had improved views on the focus of their professional development, had improved beliefs about teaching and learning in that particular area, and were able to develop classroom activities that aligned with the scope of the professional development. The aim of this original project was to motivate researchers to "consider multiple level evaluations of future professional development programs" (Kartal et al., 2019, p. 402).

This project, likewise, sought to evaluate a professional development workshop from multiple levels. These levels - belief, learning, reaction, transfer, and results - will be explored in greater detail below. Since this was an undergraduate project completed outside of course requirements, the researcher modified this to be a reflective exercise, rather than a project that would require internal review board approval.

The data collection instruments for each level will be further outlined in their sections. There were both qualitative and quantitative instruments. Although these surveys could be modified for use regarding large scale program evaluation, the purpose of this paper is for the researcher to judge the effectiveness of the session through the five-level model. Each of the following sections will begin with a summary of the processes from Kartal et al. (2019). It will be followed by the modifications and implementations of this step by the researcher.

Belief

Kartal's Context

Research has shown that it is imperative for educators to develop self-efficacy beliefs so that they can, in turn, effectively adapt lessons learned in professional development settings to their classrooms (Luft & Hewson, 2014). Self-efficacy refers to the teacher's belief that he/she/they can achieve the outcomes that are presented during the professional workshop (Bandura, 1997). It is suggested that, when teachers engage in high quality professional development, the likely outcome is an increase in self-efficacy (Kartal et al., 2019). The Kartal team highlighted several evaluation models that focus on this self-efficacy, including Metfessel and Michael's (1967) evaluation model, Stufflebeam's (1969) evaluation model, and Kirkpatrick's (2001) evaluation model. Each of these models, according to the authors, yielded "insufficient explanatory power" (Kartal et al., 2019, p. 405).

Researcher Implementation

Because of the insufficient sample size, the faculty mentor and the researcher felt supported to develop their own

simplified evaluation model for this reflective exercise. The researcher modified the Research Comfort Level Inventory Survey (Levitt & DeArmond, 2021). This survey, included in full in the discussion portion of this paper, focused on comfortability as an indicator for the likelihood of positive self-efficacy and transfer to the classroom.

Learning

Kartal's Context

Given the nature of the project, an open-ended response question was added to the Reaction Survey. The responses were then coded for emergent themes. In the original Kartal project, interviews were transcribed, transferred to the qualitative data analysis program, and then grouped regarding nature of science (NOS) themes (Kartal et al., 2019). For the researcher's data, with only one reflection, the themes were more easily emergent. During the project discussed in Kartal's work, the teachers' learning was self-reflected. Thus, explicit-reflective instruction was adopted in the teacher training sessions and in all activity. During the workshops, teachers were introduced to context-specific NOS activities and the teachers' opinions about the activities were recorded. Teachers were given the flexibility to apply the shared activities according to the needs of the students in their classes. The next workshop allowed them to reflect on their experiences and thoughts on their practice (Kartal et al., 2019). Research has also shown that using formative assessment rather than summative assessment can improve learning (Bennett, 2011). This study is the first to use formative assessment and discourse analysis in a professional development program for in-service teacher education (Kartal et al., 2019). The Researcher Implementation section is not included in this portion because the researcher utilized the same process of using open-ended responses to code for emergent themes.

Reaction

Kartal's Context

After the assessments, the teachers' reactions were collected. In the Kartal project, the first question concerned contributions of the professional development programs to teaching as a profession. The second question addressed teacher perceptions of immediate applicability of the professional development. The researchers then sought to identify the differences between the professional development program and other programs they may have attended in question three. The final question focused on the identified strengths of the professional development program and the researchers sought information on aspects that were lacking or could be improved (Kartal et al., 2019).

Most of the teachers found that the program helped them to improve their teaching. Similarly, more than half of the teachers indicated that the program helped to improve their classroom practices about NOS. For example, 61% of the teachers shared that they made progress about integrating the NOS into scientific content (Kartal et al., 2019). Teachers were also asked to evaluate the strengths and weaknesses of the continuing professional development program about NOS. With regard to the strengths of the program, the teachers mostly mentioned the exchange of information and experiences among teachers, the consideration of the feedback received from teachers in the activities, the provision of feedback about teacher practices, and the opportunity to participate

actively. Along these lines, 56% of teachers indicated that the exchange of information and experience among teachers was one of the strengths that came to the forefront (Kartal et al., 2019). Most teachers found it helpful in their development.

Researcher Implementation

This process was streamlined for the researcher. Reaction data was collected using a survey the researcher adapted from the Professional Development Survey for Educators and School Leaders PDE-3521 (Pennsylvania Department of Education [PDE], 2021). This specifically looked at the strategies that were presented, the opportunities for networking, the likelihood of future engagement in this topic, the usefulness of the resources that were shared, the knowledge gained, and the likelihood of transferability.

Transfer

Kartal's Context

In addition to the data collected from the teachers, the Kartal project (2019) also collected data points from the students. Students were measured using the Views on Nature of Science (NOS) Questionnaire. The percentages of students who had naive views at each grade level decreased, and the percentages of students who had eclectic and informed NOS views increased. Where the teachers grew in knowledge the students did as well. The literature supported the results that participation in long-term professional development programs improves teachers' views about NOS (Akerson & Hanuscin, 2007), beliefs about learning and teaching the NOS (Bell & Maeng, 2013), and classroom practices about the NOS (Akerson & Hanuscin, 2007). Likewise, these changes reflect positively on learning outcomes for students (Lederman et al., 2012).

Researcher Implementation

Although the researcher did not collect data directly from the students, the researcher did reflect on the perceived success of a lesson guided by the concepts and resources from the professional development session. Data that was transferred, as per the Five Step Evaluation model, was used in the lesson plan that the faculty mentor and researcher drafted immediately after the workshop concluded, using the lessons learned and resources from that workshop.

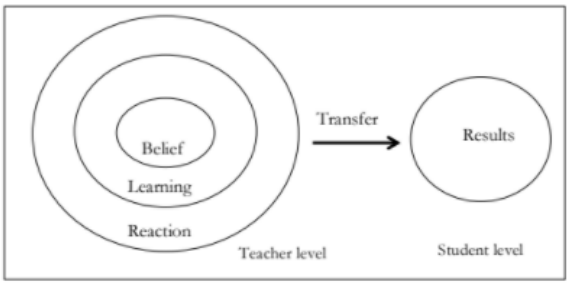
Results

Kartal's Context

To better understand what results means to the Kartal team, it is necessary to include an image from their original paper (see Figure 1).

Figure 1

The Five Step Evaluation Model (Kartal et. al., 2019, p. 407)



Note. The model above was produced by Kartal et. al. in 2019 and is a visual representation of the five steps in their evaluation model. From "A five-level design for evaluating professional development programs: Teaching and learning about nature of science," by Kartal, et al., 2019, Issues *in Educational Research*, 29*(2)*, p. 402.

In the image, the first four levels are focused on the teacher and the final level is focused on the student. It reinforces the idea that action must be taken on professional development sessions. Although transfer of lessons learned is the desired output, the likelihood of transfer is low without intentional processes in place to ensure that the attendee is focused on that goal. The transfer (the lesson) then can generate results.

Researcher Implementation

For this reflection, the results section included a more open-ended approach. The researcher sought to describe her perceptions on the transferability of the workshop to the classroom lesson and to include student work to reinforce her explanation.

Discussion

In this section, the researcher discusses the overall takeaways based on the research instruments and the researcher reflection. It includes data that is both quantitative and qualitative. The quantitative data was collected in a Beliefs Survey that was implemented as a pre-and post-data collection instrument. The second quantitative instrument, the Reaction Survey, was self-administered after the professional development session. Finally, the quantitative narrative will be infused throughout, along with an example of how this session was transferred and applied.

Researcher Teacher Views of Beliefs

The Beliefs Survey (see Table 1 in Appendix B) showcases the growth in comfortability for the researcher. Table 1 provides a visual representation of the perceived growth in comfortability between the pre-survey and the post-survey regarding instructional content and practice related to the topic of art, activism, and Indigenous women for the elementary setting.

The x-axis represents each of the questions that the researcher responded to both before and after the professional development session. The y-axis represents a Likert-scale response where 1 indicates Strongly Disagree and 5 indicates Strongly Agree. In nearly every area, the post-survey indicated a Strongly Agree response on the Likert-style scale. The only area in which the researcher did not express a Strongly Agree pertained to comfortability regarding the Smithsonian Essential Understandings Framework (National Education Initiative, n.d.). This resource was shared and an example of how it could be applied was also provided during this training. However, both resources were shared in the Zoom chat with the expectation that attendees would dedicate time to unpack the information independently of the training. At the time of the post-survey, that process time had not occurred, but the researcher plans to dedicate time to that endeavor during the transfer portion of the five-step process.

After observing the NK360º workshop, the researcher gained more insight into Indigenous literature, which, in turn, translated to greater confidence demonstrated by the researcher when presenting information on this topic to her students. The researcher's confidence grew by reading the book that America Meredith - the Cherokee Nation artist and activist who facilitated this session - recommended: *Classified: The Secret Career of Mary Golda Ross, Cherokee Aerospace Engineer* (Sorell, 2021). After reading the book, she recognized that she had never previously been given or shown a book about an Indigenous person. She expressed shock during a meeting with the faculty mentor in

which the researcher shared that she had never heard about Mary Golda Ross prior to this professional development session. After being introduced to *Classified*, the researcher felt motivated to add more books about Indigenous people to her classroom library.

The researcher's comfort with the Smithsonian Essential Understandings Framework (National Education Initiative, n.d.) has also grown by understanding Indigenous culture. There are many Native American cultures, tribes, and languages. America explained how each piece of her art connected to Indigenous people's culture. The researcher was able to see that Indigenous people held strong values. She wanted them to be themselves, speak up, and own who they are. She noticed that Indigenous people are one with the earth. The researcher also observed how America's art involved plants or being outside in nature. Learning more about Indigenous cultures and beliefs helped the researcher stray away from teaching lessons that lack depth. Through the knowledge acquired, the researcher can give her students more in-depth lesson plans with facts beyond those provided in textbooks. The researcher grew by seeing the importance in keeping the Indigenous culture alive. Many lessons and standards tend to focus on past genocide while failing to see the accomplishments of the diverse American Indian tribes/communities/nations. America Meredith counteracts this by honoring the Indigenous Culture through her artwork. In her artwork, Meredith draws attention to the beauty, as well as to important people or things in her culture. After attending the NK360º workshop, the researcher swill wanted to continue to learn more about Indigenous culture and signed to attend the two additional workshops.

Researcher Learning from Training

The training provided participants with a plethora of resources. Some of these resources would require the researcher to commit additional independent time for processing, and others, like the See, Think, Wonder (Visible Thinking Project, 2019) resource, were immediately applicable to the classroom. During the training, the researcher and the faculty mentor both took copious field notes. These notes were later synthesized into key learning outcomes for the researcher. There were two key outcomes that were identified as having a high impact on the researcher. These two outcomes will be described in detail in the following two sections.

Indigenous Culture is Not a Monolith

During this presentation, the focus was primarily on Cherokee culture. At times, the artist discussed transferability of concepts between tribes. For the researcher, it was a new and exciting experience to be exposed to Indigenous culture as something more intricate and more nuanced than previous exposure had led her to believe.

Resources from the professional development that were provided included the Smithsonian Essential Understandings Framework (National Education Initiative, n.d.) and the See, Think, Wonder (Visible Thinking Project, 2019) protocol (which was incorporated as a teaching strategy in the transfer stage of the five-level evaluation model). Based on recommendations from the facilitator, the researcher and faculty mentor purchased the children's book *Classified: The Secret Career of Mary Golda Ross, Cherokee Aerospace Engineer* (Sorell, 2021).

Critical Questioning Strategies for a More Authentic Classroom

Attendees left the training with several resources, including the Land Acknowledgement (Native Knowledge 360 Education Initiative, 2022), the NK360° Framework for Essential Understandings about American Indians (Native Knowledge 360°, 2022), and Harvard's See, Think, Wonder (Visible Thinking Project, 2019) activities. See, Think, Wonder provides a structured and simple way for students to make careful observations and interpretations about visual imagery (Visible Thinking Project, 2019). This three-step routine can be intentionally set through asking students to use the sentence stems in either written or oral formats. It is a great activity for anticipatory hooks or for independent reflection because it creates a structure for in-depth observation.

In addition, the training began and ended with questions. The beginning question asked: "What does it mean to be an activist?" Many exclaimed an activist is being a voice and recognizing the truth. America Meredith's artwork connected to the question. The session ended with a final question: "In what ways do you think of your existence as an act of resistance?" As educators, we are aware of the importance of self-reflection. However, it is important that students, too, engage in the self-reflective process. Asking ourselves and our class questions can bring up discussions. It focuses on the learning and beliefs of each individual. The researcher learned how productive it is to have students self-reflect throughout the lesson. It allows the student to use previous knowledge and to come to their own conclusion using critical thinking.

Researcher Reactions to Training

The researcher had strong positive reactions to the training. In fact, the Reaction Survey, modified from the Professional Development Survey for Educators and School Leaders (Pennsylvania Department of Education, 2021), showed positive perceptions of the training (see Table 2 in Appendix C).

Table 2 includes all questions from the original Professional Development Survey for Educators and School Leaders (Pennsylvania Department of Education, 2021); the bolded criteria were the ones identified as being directly related to the five-step evaluation model. These three statements will be clarified further below.

"I will continue to learn about this topic as a part of my own professional development."

This statement is most directly related to transfer and results. The researcher indicated that she strongly agreed because she wants to continue to learn about new cultures, which she may have in her classroom. It will help her have a better understanding of her students. Continuing to learn about Indigenous culture will help the researcher in her professional development by seeing how each culture has similarities. As the researcher learns more, she will continue to gain more respect and appreciation for Indigenous beliefs. As a teacher, the researcher understands that to positively grow in her professional development, she must continue to learn.

"I gained knowledge and skills to implement this professional development into my classroom."

This statement is most directly related to beliefs and learning. The

researcher indicated that she strongly agreed because she knows it is essential to be inclusive of all cultures. During lessons about Indigenous people, she mentioned that it will be beneficial to have additional information about the culture to provide for students. It will give students a new outlook of a different culture. The knowledge the researcher gained can be implemented into the classroom by mentioning important figures, such as Mary Golda Ross. In addition, the researcher can give details about Indigenous beliefs and methods. Giving students knowledge that textbooks do not provide will allow them to see a culture in a fun new way. The researcher wants her students to stay engaged in their learning and strive to want to know more.

"This professional development provided me with research-based instructional strategies to assist students in meeting rigorous academic standards."

This statement is most directly related to learning and transfer. The researcher indicated that she strongly agreed because the professional development demonstrated ways to self-reflect and observe. One way to help assist students in meeting rigorous academic standards is listing what they see, think, and wonder about a picture. She noticed that asking questions before teaching a topic can be a useful strategy for students to reflect on previous knowledge. Separating the thought process helps students to collect data on what they observed. The researcher believes that students can meet standards by being active learners and seeing visuals. She observed that with each topic that was presented there was a picture to help elaborate, which is beneficial for students.

Researcher Knowledge Transfer and Results

After attending the workshop, the researcher was inspired to apply the lessons learned in her field classroom. With mentor teacher approval, the researcher was permitted to do a small group lesson with a subsection of the students. The reflection on implementation comes from the researcher and did not require additional IRB approval. In this section, the readers will have access to the lesson plan and resources. After the lesson materials, the researcher will share key takeaways based on using resources from this professional workshop series.

Lesson Plan: Learning about Mary Golda Ross through Art and Inquiry

The planned lesson followed a traditional 5E lesson model and aligned to multiple standards gathered from the National Council for the Social Studies (2010), the NMAI Essential Understandings (Native Knowledge 360°, 2022), and the 4th Grade Texas Essential Knowledge and Skills Standards (Texas Education Agency, 2019).

The students began the lesson by listening to and reading a Land Acknowledgement (Native Knowledge 360 Education Initiative, 2022). Students were then asked to reflect on why land acknowledgements are used. At that point, the researcher explained the See, Think, Wonder protocol and created a space for the students to unpack an artwork titled *Ad Astra per Astra* by America Meredith (2010a). This image featured Mary Golda Ross with the picture of a rocket ship, a project with which she played a significant role. There were also examples of Cherokee images and writing included in this image.

See, Think, Wonder is a routine for exploring works of art that was developed

by Project Zero in the Harvard Graduate School of Education (Visible Thinking Project, 2019). This activity encourages careful observations and creates a classroom space for curiosity and inquiry.

After students were given several minutes to explore the artwork *Ad Astra per Astra* (Meredith, 2010a) with their group, the researcher allowed them to present their observations and wonderings before taking the time to introduce the students to the artist, America Meredith, and the scientist, Mary Golda Ross. Another recommendation from the workshop was to use a student-friendly book about this Cherokee aerospace engineer. The researcher engaged in a read along of the *Classified: The Secret Career of Mary Golda Ross, Cherokee Aerospace Engineer* with her students, pausing to clarify questions and to provide a space for students' continued inquiry (Sorell, 2021). During this phase of the lesson, the researcher intentionally focused on co-constructing the definitions of the words *honor* and *Indigenous* with her students.

After this conversation, the researcher shared another America Meredith image with the students. This piece, titled *Culture is the Vaccine for Mass Culture* (Meredith, 2010b), highlights Indigenous knowledge of flora and the role that this knowledge plays in honoring past and contemporary culture. It depicts a plant that is important to the Cherokee with a massive root system below. This time, using skills gained over the lesson, students worked with partners to complete a new See, Think, Wonder (Visible Thinking Project, 2019) chart. For this particular piece of artwork, the researcher shared a story from the workshop about the Cherokee blood plant and how the Caddo, a displaced Indigenous tribe associated with Texas, would have selected the sunflower to represent them.

Finally, students were provided with sentence stems to respond to the following prompt: How does America Meredith's artwork honor Indigenous culture? The researcher was hopeful when engaging in this lesson. She reflected on her ability to transfer knowledge from the workshop to her classroom.

Lesson Reflections

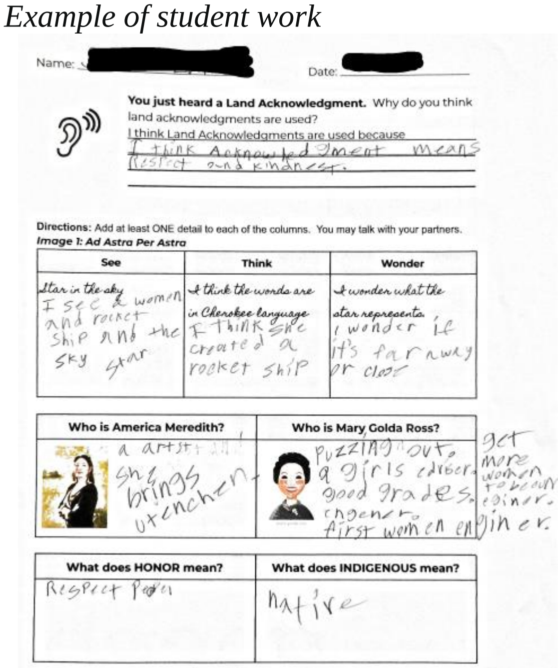
The researcher perceived this lesson as successful based on her experiences and the experiences of her students. Several components from the workshop directly impacted the lesson's success. Introducing the text *Classified* (Sorell, 2021) to the students with questions related to constructing definitions for "Indigenous" and "honor" caused the students' social constructed concepts of gender norms to flip. During the lesson, the researcher asked the students to predict how Mary Golda ross would be accepted by her male colleagues at Lockheed. The students assumed Ross would face gender discrimination, but were shocked to see that she was accepted for her intellectual contributions. Furthermore, the students were excited about Ross and asked their own extension questions after completing the reading portion of the lesson . The book included a supplemental timeline and biography that the researcher used to support this discussion.

The See, Think, Wonder (Visible Thinking Project, 2019) activity also succeeded. The students enjoyed identifying items in both photos immediately (see Figure 2). The quality of the predictions made by the students was impressive. For example, one student predicted that the women in *Ad Astra per Astra* (Meredith, 2010a) had made the rocket ship in the background. For the *Culture is the Vaccine for Mass Culture* image (Meredith, 2010b) image, a student connected the depth of the roots of the plants as a symbol for the depth of the Cherokee.

Figure 2
Students Working with the Researcher on Lesson Materials

The students themselves rated the lesson as strong. One student said that she felt inspired as a girl after this lesson to put more effort into her math and science classes. They also expressed excitement at being able to bring this content knowledge home to their families. Student work (see Figure 3) showcases the predictions, the questions, and the connections that students were making throughout.

Figure 3
Example of student work



Name: [redacted] Date: [redacted]

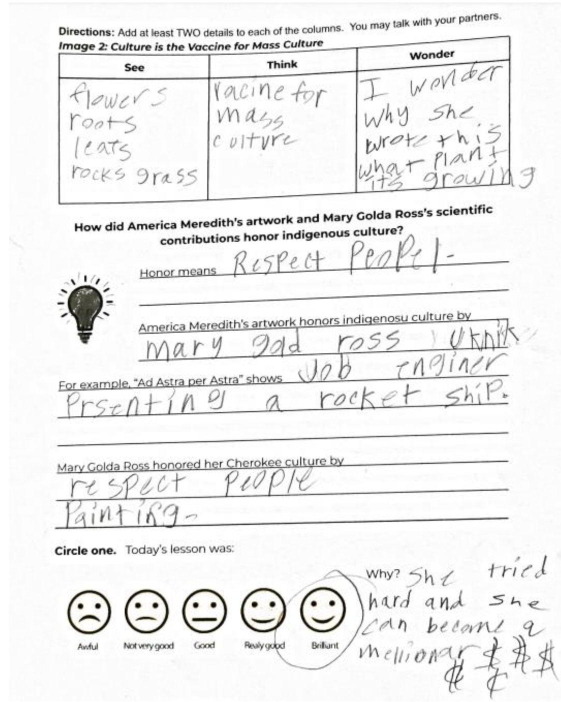
You just heard a Land Acknowledgment. Why do you think land acknowledgments are used?
I think Land Acknowledgments are used because I think Acknowledgment means respect and kindness.

Directions: Add at least ONE detail to each of the columns. You may talk with your partners.
Image 1: Ad Astra Per Astra

See	Think	Wonder
Star in the sky. I see a women and rocket ship and the sky star	I think the words are in Cherokee language. I think she created a rocket ship	I wonder what the star represents. I wonder if it's far away or close

Who is America Meredith?	Who is Mary Golda Ross?
a artist. She brings utencher	Puzzling out. a girls career. good grades. engener. first women enginer. get more women to beam enginer.

What does HONOR mean?	What does INDIGENOUS mean?
Respect People	native



Directions: Add at least TWO details to each of the columns. You may talk with your partners.
Image 2: Culture is the Vaccine for Mass Culture

See	Think	Wonder
flowers roots leafs rocks grass	vacine for mass culture	I wonder why she wrote this what plant its growing

How did America Meredith's artwork and Mary Golda Ross's scientific contributions honor indigenous culture?

Honor means Respect People.

America Meredith's artwork honors indigenosu culture by mary gold ross I think

For example, "Ad Astra per Astra" shows Job enginer Prsenting a rocket ship.

Mary Golda Ross honored her Cherokee culture by respect people painting.

Circle one. Today's lesson was: Awful / Not very good / Good / Really good / Brilliant

Why? She tried hard and she can become a mellionar $ $ $

Although the lesson was enjoyable and the quality of discussion was strong, the researcher noticed that the writing quality was lacking. This paper does not specifically go into reasons for this, however, the researcher can suggest that there might be unknown consequences from disrupted school instruction due to the pandemic that resulted in a lack of writing practice. Also, the researcher suggested that a more intentional approach to constructing a definition of acknowledgement would be necessary for the students to truly grasp the significance of the Land Acknowledgement (Native Knowledge 360 Education Initiative, 2022) at the beginning of the lesson.

Conclusion

After engaging in the full five level evaluation model, the researcher was left with the recognition that attending a professional development session is not enough. Attending the session, with the intention of transferring the knowledge gained into an immediate action, is how an

educator can truly gain as much from the experience as possible. The initial session hooked the researcher to continue learning about this topic for her own professional development.

The researcher has since committed to two additional workshops in the Native Knowledge 360º Series (NMAI, 2022). In the first, Dr. Debbie Reese (Nambé Owingeh), will have a discussion with Joanne Robertson, the author and illustrator of *Water Walker*, about the use of books as classroom tools to deepen student knowledge of Indigenous women's roles and contributions to environmental issues. The second session will be led by Rebecca Head Trautmann, the assistant curator of contemporary art at NMAI. In this session, the researcher will learn to use classroom materials from the NMAI's NK360º series to learn ways on how to introduce students to difficult histories, including forced removal. Ultimately, NMAI served as an inspiration for the researcher, and it is highly recommended for readers to engage in their future workshops.

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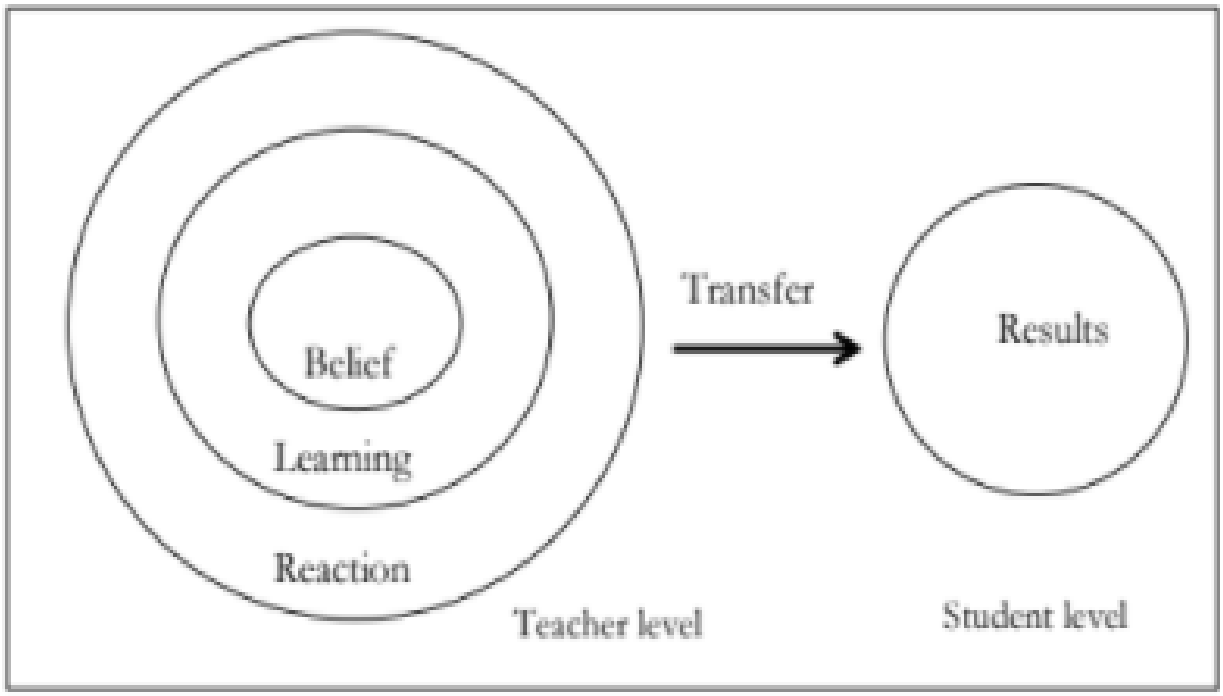
Appendix A

Figure 1

The Five Step Evaluation Model (Kartal et. al., 2019, p. 407)

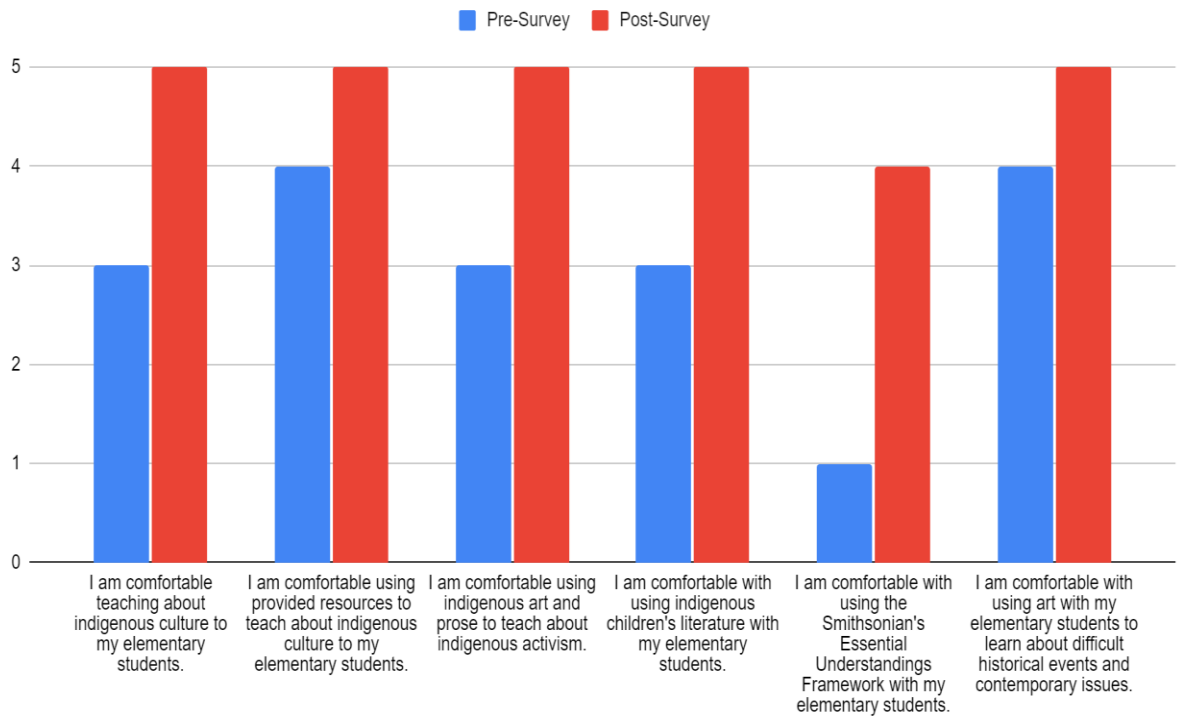


Note. The model above was produced by Kartal et. al. in 2019 and is a visual representation of the five steps in their evaluation model. From "A five-level design for evaluating professional development programs: Teaching and learning about nature of science," by Kartal, et al., 2019, Issues *in Educational Research*, 29*(2)*, p. 402.

Appendix B

Table 1

Beliefs Pre and Post Survey



Appendix C

Table 2

Reaction Survey

The presenter(s) was/were knowledgeable and effective.	Strongly Agree
The strategies used by the presenter were appropriate in helping me attain the goal(s) and/or outcomes of this professional development experience.	Strongly Agree
This professional development offered sufficient and appropriate opportunities for networking.	Strongly Agree
I will continue to learn about this topic as part of my own professional development.	**Strongly Agree**
My mentor teacher will support me in the implementation/use of this information and training.	Strongly Agree
The handouts and materials were adequate and useful.	Strongly Agree
I gained knowledge and skills to implement this professional development into my classroom.	**Strongly Agree**
This professional development provided me with research-based instructional strategies to assist students in meeting rigorous academic standards.	**Strongly Agree**

Note. The statements that are bolded directly align with the five-step evaluation model.

Appendix D

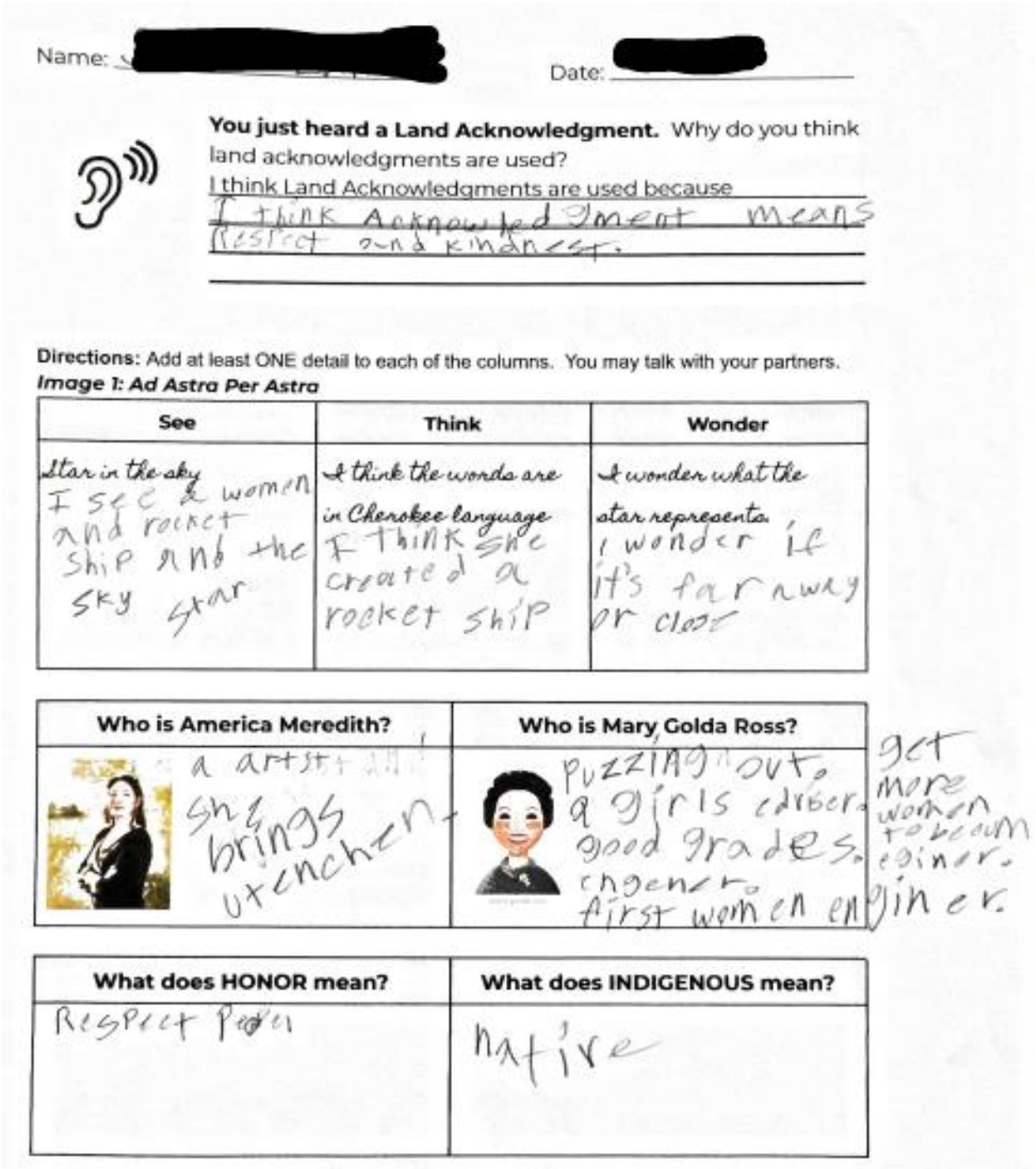
Figure 2

Students Working with the Researcher on Lesson Materials

Appendix E

Figure 3

Example of student work



Name: [redacted] Date: [redacted]

You just heard a Land Acknowledgment. Why do you think land acknowledgments are used?

I think Land Acknowledgments are used because

I think Acknowledgment means Respect and kindness.

Directions: Add at least ONE detail to each of the columns. You may talk with your partners.

Image 1: Ad Astra Per Astra

See	Think	Wonder
Star in the sky I see a women and rocket ship and the sky star	I think the words are in Cherokee language I think she created a rocket ship	I wonder what the star represents. I wonder if it's far away or close

Who is America Meredith?	Who is Mary Golda Ross?
a artist she brings utencher.	puzzling out. a girls career. good grades. engener. first women engineer. get more women to learn engineer.

What does HONOR mean?	What does INDIGENOUS mean?
Respect Pride	native

Directions: Add at least TWO details to each of the columns. You may talk with your partners.

Image 2: Culture is the Vaccine for Mass Culture

See	Think	Wonder
flowers roots leafs rocks grass	racine for mass culture	I wonder why she wrote this what plant its growing

How did America Meredith's artwork and Mary Golda Ross's scientific contributions honor indigenous culture?

Honor means Respect People

America Meredith's artwork honors indigenosu culture by mary gold ross Uknik

For example, "Ad Astra per Astra" shows Job enginer presenting a rocket ship.

Mary Golda Ross honored her Cherokee culture by respect People Painting.

Circle one. Today's lesson was:

Why? She tried hard and she can become a mellionar $$$$