



Needs Assessment
Due Date: Before Departure
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Personal Vision for the Classroom

Archaeology and the movement of early humans and their civilizations is somewhat enigmatic in the social studies and the science classroom; my personal vision is to use inquiry and authentic science activities to help students come to their own conclusions what that may look like. Many times, the curriculum is relegated to students reading and answering questions about such a fascinating topic, and I want them to do the work of real scientists to help piece together the mystery! Archaeology is teeming with exciting themes, like mysteries, being a detective, and putting together clues about the past, and my goal is to create this culture of sleuthing into the past into the classroom with a lasting project that not only our students can participate in but students around the world.

I envision this being more than one two-week adventure; I truly hope to infuse a culture of science appreciation in many ways. This means following other expeditions; having a Polar Night at school to amp folks up, and to design an authentic project partnering with organizations in our region so that students have a chance to do fieldwork themselves. Student scores on science have been historically low, especially with girls, at school, so I am hoping to ignite a passion for archaeology and the Arctic regions by having an Archaeology Club partnering with local researchers or archaeologists; hosting online contests such as an art contest or a poem contest about their own pasts in order to find out about others' pasts, and the like. This integration looks like this in the classroom:

1. Pre-trip orientation for students to engage in other expeditions
2. Pre-trip PolarConnect Event and/or Skype with interested schools to pump them up for the live summer adventure
3. Creating an Archaeology Club
4. Hosting a local researcher and identifying current regional archaeology projects happening and investigating how this might look in the classroom
5. Post-trip implementation of technology unit and virtual field trip and authentic project
6. Post-trip PolarConnect and Skype with researchers

The realities of the classroom include time and resources; I hope to combat these by writing grants for extra funding for any materials for extra projects we may have and to integrate the subjects to create more time for in-depth research. This may mean partnering with colleagues to integrate polar literature during English time or using math applications that have to do with our expedition, but with these questions in mind, I'm ready to start planning a great, long-lasting project that students can use. The remoteness of this trip also means I have to be

creative and work with my team to create rich pre and post-trip resources as we won't be able to have PolarCONNECT events from the field or super-rich resources being updated daily.

Student Needs

We have a diverse population with a large amount of special needs and English as a Second Language Learners; with this in mind, I look forward to designing the PolarTREC experience and materials with hands-on and active learning strategies in mind. Our girl students aren't necessarily the most engaged in science, so I'm particularly looking to reach out to female archaeologists in the area to serve as mentors or role models for our project. Likewise, our low socioeconomic demographic means they don't always have the technology at home for extension activities and our school doesn't have all the equipment they need, so I'm partnering with organizations to get this technology into the hands of students. Finally, by working with individual students' Individual Education Plans (IEPs), I hope to address modifications that allow all students to access the wealth of material available with PolarTREC. These three needs will be addressed in particular:

1. ESL Students
2. Students with Special Needs
3. Student Content Knowledge in the Sciences

These three needs are best tackled with **differentiation of instruction** at the helm. Oftentimes this might mean pre-lessons building academic vocabulary, post-lessons for follow-up like having a BrainPOP video, closed-captioned, available on our resources site. Reading and science scores have historically been low, so I'm interested in helping 1) raise content level knowledge and 2) raising motivation in the sciences and 3) raising interest in science careers for all students and particularly girls. I'm hoping to track this progress with pre and post surveys and assessments for my students, and focusing on differentiation strategies will help, including:

1. Developing tiered assignments
2. Workshop-based teaching where I can have small groups with students who need help

Teaching Methods

As a project-based learning and constructivist teacher, I strive to create learning experiences based on inquiry, depth, and complexity, and I hope to hone all of these pedagogical skills in the next year with PolarTREC. In particular, I want to focus on:

1. **Inquiry:** I want to design a unit that asks essential questions, like "Where did the first humans come into North America?" and allow students questions to this prompt guide our research into the resources and projects that Jeff and the team and I create.
2. **Project-Based Learning:** I want to design a hands-on unit where students can potentially experience the real work of archaeology. Jeff and I discussed this potentially using real data that they have accumulated, such as taking images of flakes and fluted points and classifying them so that their actual work goes to build the integrity of the flute-mapping system. It also could live in a virtual field trip that we design in **Google**

Earth, whereby students are prompted through a series of “stops” on the way from New York to Kivalina, and at each they could have an online journal where they answer questions, reflect, and come up with more questions! Ideally, I’d like to have them at the end of the project be able to come up with the “solution” to the “mystery” for Jeff-- what, after discerning all of the data, do they think actually happened? It will be great for them to also have this practice in scientific discourse, because after chatting with Jeff, it’s clear that not all is agreed upon in the scientific world, particularly in archaeology. How cool would it be to host an **“Early Civilization Summit”** where students gather their clues and facts and present their ideas to say what actually happened? We could invite Jeff or local archeologists to patch in and hear their arguments and respond!

3. **Technology Integration:** We have the great fortune of being able to use a 1:1 Google Chromebook model in our classroom, and I want to study the pedagogical applications of such. How does this look with following online expeditions? I hope to potentially include a visit by Jeff or a local field researcher to eventually come help with our hands-on project, but also to connect with us via Skype and other methods as an “Archeology Mentor” or a “Polar Mentor” to help instill role models in science for our students and to see what scientists actually do. This also means content management-- I will be using Edmodo as my main reflection site where I post questions, quizzes, and resources for my students (which means I’ll also link my journal entries and content here as well). This will allow me to **differentiate content** to my students; as my student needs are across the board, hosting a Project Page on Edmodo allows me to interact with my students directly and give them assignments based on their skill and interest levels. We also will be using Google Docs to collaborate, Google Spreadsheets to share information, and Google Presentations to present it!

Integrating these three changes (or enhancements to things I’m already in the process of changing) will be important to help the sciences become engaging to students, help them better achieve at content knowledge, and hopefully encourage careers in the sciences.

Learning Expectations

I hope to learn the following concepts in detail:

1. Data collection in archaeology
2. Flora and fauna of the arctic Alaska region
3. Competing theories in Early Human migration and how this data supports/refutes it
4. The latest GIS technologies in mapping/keeping track/analyzing site data
5. The latest