Monnig Meteorite Gallery + Native Earth Native Sky

NaMe Interactive Map Learning Tool
Vision

Version 1.1

Revision History

Date	Version	Description	Author
23/09/2022	1.0	1.1 Vision, and 3.3 Alternatives & Competition	TES
09/04/2023	1.1	Edits/Updates for final submission	Erika Rebollo Diaz

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Vision

1.   Introduction

Most of us do not think about the land upon which we live and work; whereas, Indigenous communities have a deep-seated understanding of the importance and sacredness that their land has in their daily lives (native lands.ca); they have a deep sense of place. Planetary science "is a grand human enterprise that seeks to discover the nature and origin of the celestial bodies among which we live…" (Ref nasa doc). In other words, planetary science is rooted in a sense of place; it provides the context for all planetary science research. Meteorites are unique as they have two places: the place from which they came, and the place where they fell. All meteorites found within North America fell on Native Lands.

The primary objective of Native Lands (NaLa) is to amplify the work of the Native Earth | Native Sky (NENS) program by recognizing the critical importance of free-choice learning in STEM education and providing a different lens through which STEM can be made culturally-relevant for students in Native American nations. This will be achieved in two major ways. Firstly, NaLa will add free-choice learning (*i.e.* beyond a traditional classroom) as a mechanism to bring Native American cultural perspectives into STEM education, both for the Native and non-Native American populace. Secondly, a focus on meteorites found on the lands of the three Oklahoma Native American tribes participating in NENS provides a concrete example of the cultural relevance of planetary science and STEM, utilizing concepts that are deeply rooted in a sense of place.

1.1   Background

The NENS SciAct program at OSU is creating culturally-relevant curricula that interlink Native American stories and language with STEM principles. This allows students to better identify with the concepts taught, which increases the understanding and interest in STEM. However, while schools are traditionally considered the primary centers of learning, more than 50% of people attribute their scientific knowledge to free-choice learning experiences [3].

Over the 12 months of SCoPE funding, a website will be developed that utilizes the culturally-relevant curricula insights from NENS to educate free-choice learners on meteorites that fell on the Native Lands of the three tribes involved in the NENS project. Long term, this goal will be expanded to include the Native Lands of more tribes as well as more free-choice learning mediums, including publications and a permanent exhibit at the Monnig Meteorite Gallery on the campus of Texas Christian University.

1.2   References

- Client NSF grant - https://scope.asu.edu/nala/

2.   Business Requirements

2.1   Business Opportunity/Problem Statement

The problem of	developing a free-choice educational resources, while also providing supplemental planetary-science resources
affects	native american students and teachers
the impact of which is	increased interest and participation of an underrepresented important people group in the national STEM workforce, as well as provide an example of the relevance of place-based STEM education for all individuals.
a successful solution would be	creating an interactive map which will display where the meteorites landed and also provide educational supplementary resources

2.2   Business Objectives

2.3   Success Metrics

The members of the 3 nations inside Oklahoma are happy with the website

2.4   Vision Statement

For	NaLa
Who	Will develop STEM resources that focus on meteorites found on Native American Lands
The (product name)	*interactive map*
That	*increasing interest and participation of an underrepresented important people group in the national STEM workforce, as well as providing an example of the relevance of place-based STEM education for all individuals.*
Unlike	*other free choice learning websites*
Our product	*caters specifically to indeginous peoples' learning style*

2.5   Business Risks

RI-1: The website may not be used. (Probability = 0.3; Impact = 9)

2.6   Business Assumptions and Dependencies

AS-1: All users will have access to the appropriate user interfaces they need in order to access and run the site.

DE-1: If TCU IT is chosen as the server for this project to be deployed on, we must have their support in this endeavor.

3. Stakeholder Profiles and User Descriptions

3.1 Stakeholder Profiles

Stakeholder	Major value or benefit from this product	Attitudes	Major features of interest	Constraints	End user or not?
Dr. Mayne	As admin, would be a platform for her to post information about meteorites for all to see	Strong commitment through release	Map with Native American regions shown,	None identified	Yes
Students	Enhances learning about meteorites due to place-based map	Don't know about it yet, but the expected enthusiasm is high	Meteorites displayed on map Native American regions	None identified	yes
Teachers	The website will provide resources that they can use for their classes	Don't know about it yet, but the expected enthusiasm is high	Downloadable pdf materials linked to every meteorite	educational resources based on meteorites	Yes
Collectors	As a meteorite database, at scale, this can be a platform for seeing all info pertaining to meteorites	Strong enthusiasm, but not main target	Simplicity of use; platform for meteorite info	They would still have to get in touch with other venues	Yes

3.2 User Environment

A website that is mobile-friendly.

3.3 Alternatives and Competition

The stakeholder believes the alternatives are not ideal for teaching indigenous children in classrooms about meteorites. The alternative is teaching them the traditional way. There are interactive maps that list where meteorites have fallen, but they do not list nor are specific to the Native Nations in Oklahoma.

4. Scope and Limitations

This product must share educational information about meteorites to k-12 students is a simple, engaging, interactive way. It must connect well with the back and front end portions, and must be well-documented in order to grow the site's contents and educational reach going forward.

4.1 Product Perspective
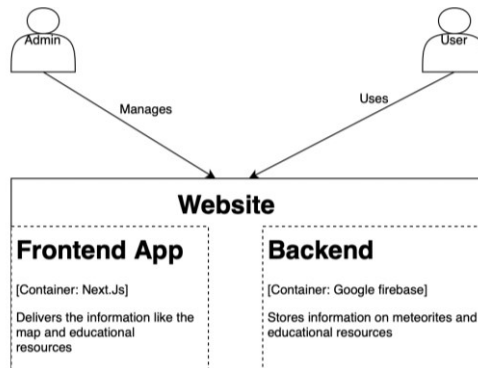
4.2 Major Features / Scope

FE-1: View meteorites that have fallen on or near Native American nations on a map

FE-2: View text, image, pdf, and link information about available educational tools

FE-3: View text and image information on meteorites

FE-4: View other meteorites that might not be on the map

FE-5: View information about the project

FE-6: View information about the authors

FE-7: Sign-in to administrator login page

FE-8: Modify information on meteorites from administrator page

FE-9: Modify information on educational tools from administrator page

4.3 Deployment Considerations

Independent deployment from TCU is best for this project.

5. Other Product Requirements

Access to Firebase is necessary. Client may have to pay for additional access when the site becomes too popular.