

Language as a Bridge: Using STEM Vocabulary and Ancient Language in Outreach to Small Culturally Distinct Populations

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Abstract

In many communities the world over, local dialects and ancient native languages are in danger of extinction as native speakers age without being replaced by an equal number of younger speakers. When the language does not contain sufficient contemporary elements to engage the younger population, the language is not spoken. Planetary science can be an engaging method of re-igniting interest in a native language, and in inspiring the younger generation to populate the language with contemporary terms defined for use within the native culture. Communities where the native language is in danger of extinction are not confined to the U.S. Such unique cultural environments include the Swiss canton of Bern, where Bernese is spoken.

The U.S. Rosetta Project has embarked upon a program to define and use vocabulary related to STEM concepts (Science, Technology, Engineering, and Math) among selected Native American communities, in a way that makes use of NASA and ESA's extensive and remarkable imagery of the remote reaches of space. These images and the notion of worlds in space have a unique ability to inspire. In this talk, we present the basics of the vocabulary we are attempting to define within communities, and some of the lessons learned when working with populations where language and culture are so intimately intertwined.

1. Introduction

As of this writing, the U.S. Rosetta Project is readying its public engagement for the project's July 2010 encounter with Asteroid 21/Lutetia. A desired activity is a contest – to be conducted with English, and French-speakers with a selected vocabulary list related to asteroids and comets. The project worked hard to find a similar vocabulary list with which

selected Native American communities could be approached for public engagement.

1.1 Navajo

In 2008, after the project's first national telecon on the Rosetta language initiative, the project learned about a student who was working on the definition of twenty-eight 'NASA' words in Navajo. 'NASA' words included such terms as 'cell phone' and 'communication satellite.' The student's senior project was to obtain the approval of the tribal Elders for the new Navajo words. Since the student's project was so complimentary to the goals of the U.S. Rosetta project in this regard, the project volunteered to adopt the completed project and use it as a baseline for continued work.

The US Rosetta Project created a draft web-page on which to host the words and definitions, shown in figure 1. The set of words, and hosting protocol for the web was proposed to the Tribal Elders for approval, which many months later was granted. A published Navajo Geology Thesaurus [1], was also used to draw a list of fifty Navajo words, from which the asteroid essay contest, similar to that devised for English-speaking students could be prepared.

1.2 Hawaiian

Hawaii has a twenty-year tradition of so-called 'Immersion' schools to insure language survival, provide culturally supportive education, bolster self-esteem and foster self-knowledge among native Hawaiian residents of the islands. In the Immersion program, students learn Hawaiian through being immersed in social interaction and meaningful content area instruction.

Issues with the Hawaiian language and its readiness to be used to describe technical and scientific topics are different than those found in the Navajo

community of Chinle, AZ. Robust dictionaries already exist in which geology basics, and contemporary terms can be described. The project was able to draw astronomy terms, geology terms, contemporary space technology terms such as 'micro-gravity', chemistry terms such as 'oxygen and carbon dioxide', and physics terms such as 'atomic mass' for the contest.

1.3 Ojibwe

The project drew vocabulary from a published 2009 thesaurus written to capture words which address contemporary mathematical, human medical, and selected western science concepts in Ojibwe (Minnesota and Wisconsin). The project was also able to propose some geology terms for definition in Ojibwe, following a careful examination of terms from the Navajo thesaurus. Work to prepare a vocabulary list in Ojibwe for the essay contest is in progress.

3. Figures

Using the clickable map being developed below, the user will be directed to specific pages where each Navajo vocabulary word will be discussed with images and detailed text.

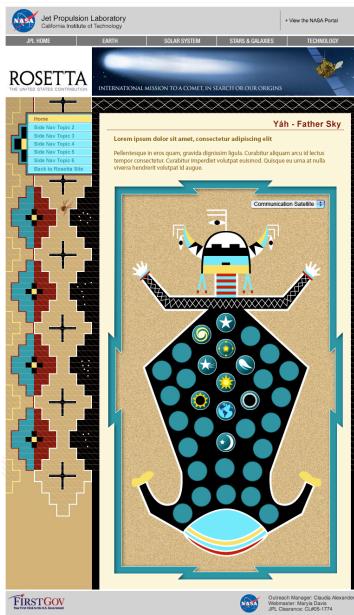


Figure 1: This is the example of a 'clickable map' the project intends to develop for the Navajo section to make the vocabulary accessible.

6. Summary and Conclusions

One positive outcome we can cite already from work with these communities is tangible effort within the community to establish a contemporary vocabulary [2]. The communities have expressed considerable excitement at the potential for engaging students with space-age imagery in their own cultural environment. A significant lesson learned is the importance of a connection and liaison to the language authorities within the community itself. These types of projects, destined to enter the public domain, will be open to intense scrutiny. One of the first questions will concern validation and verification by community, as opposed to individual. The Project must consult with recognized authorities, well versed in both Native American ways of knowing and western astronomy, as well as being completely bi-lingual, to organize and lead discussion, collaboration, and communication with the Project on aspects of the program.

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