



WPI



Preserving the Keres Language and Culture

Using modern technology to engage students' learning of the Cochiti Pueblo's Heritage

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Abstract

This project involved preserving the Keres language and culture at the Cochiti Pueblo through the subversion of English media into Keres versions. Examples of the media were produced and tools were left behind to encourage further production. A hub for all of the Keres media was created to contain all of the created media for ease of access. Overall we hope that our project progresses over the years so that eventually there is an abundance of Keres media in the pueblo.

Executive Summary

Our project worked to address English media pushing out the Keres language and culture of the Cochiti Pueblo. We tried to counteract this by subverting the English media by dubbing popular children's cartoons, creating animated movies relevant to cultural songs and stories, creating flash cards with Keres translations to match the images, and producing a website that will hold all of the above in addition to tutorials so that people can continue our work in the future . There are great programs already in place at the Cochiti Pueblo, such as the Nest Program and the Keres Children Learning Center, that provide immersion classes for the children of the pueblo and Keres classes at the local Santa Fe High School. This is why our project focuses on bringing tools to these programs; in order to help them better engage students and create a strong desire to learn Keres, and to allow them to continue to learn Keres while they are at home. Based on this our four main objectives were:

- Developing production ideas for the creation of culturally relevant media.
- Producing examples and media models specific to the Keres language and culture.
- Demonstrating learning tools to teachers and students through the creation of tutorials and offer guidance for new concepts.
- Creating a website and media channel and a hub of Keres language learning

After finalizing these objectives we worked on creating demos and mock-ups to show the students. For our demos, we were each able to create a few examples of our given media. The bulk of our results came from both our own creations as well as the creations of the students that we worked with at the Santa Fe Indian School. We created sets of flash cards from sketches found at the Cochiti Library as well as audio recorded from the teachers and students at the Santa Fe Indian School. These flash cards were divided into different categories, audio was recorded, and they were matched with appropriate sketches. We created multiple animated stories from sketches to replicate various stories and songs from the Cochiti culture, including the story of the Fox and the Prairie Dogs and

the Duck Song. These examples were created to provide the Keres classes at both the NEST program and the Keres Children Learning Center with initial media to use in their classrooms until the Hub became more populated. In addition to the animated stories, our group dubbed cartoon videos in Keres were created as examples for the students. An entire episode of Spongebob Squarepants was dubbed into Keres with help from the very talented language teachers and students at the Santa Fe Indian School. In addition to this episode, a Disney montage comprised of scenes from the Lion King, Finding Nemo, and Toy Story 3 was dubbed into Keres as well. By bringing new ways to create media we were able to show the people of Cochiti the endless possibilities using programs already on their computers.

After showing our examples and demos to the Cochiti Keres students and teachers at the Santa Fe Indian School, our next step was to demonstrate to them how to create their own media. We taught classes on how to use various programs that aided in the creation of our media including Audacity, Adobe Premiere, and Adobe Flash. Once the students had a basic understanding of how to operate these programs, we gave them the pieces they needed to create their own media. With both the help from their Keres teachers for translations and us for technical support, they were able to produce their own media while learning Keres in the process. Along with teaching the current Keres class at the Santa Fe Indian School, we also created Camtasia recordings of ourselves using the previously listed computer programs in order to create viable tutorials to leave behind for when we leave.

All of the above media and tutorials were then placed on our Cochiti Speaks Website or "KeresTube" YouTube channel. These websites were created in order to keep all of our creations and all future creations in one accessible place. We made sure that both were completely private by making them password protected so that the people of Cochiti could share these with only those they wanted to. The login information was shared with the various schools in Cochiti and the Santa Fe Indian School so that students could have access to the existing media there as soon as possible. Since the Keres Language is so directly linked to the culture of the Cochiti Pueblo, it is important to preserve the language to make sure the culture will not also be threatened with extinction.

With the results we achieved while in Santa Fe, we have high hopes for the progression of our project after we leave. By leaving behind instructions and templates, we

hope that our hub of Keres media will continue to grow as the years go on. The high interest and positive feedback that we have received from this project has given us confidence that our project will continue to evolve and take shape even without us here. In the long run, we are hoping that the hub will be populated to the extent that the media there will replace the existing English media, giving parents and teachers the option of solely using Keres media in the homes and classrooms.

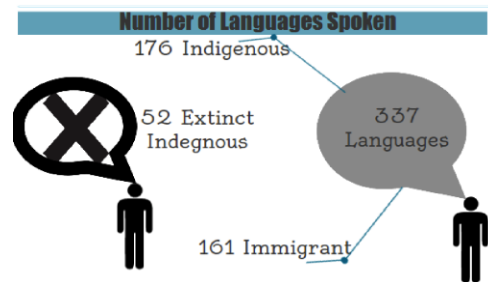
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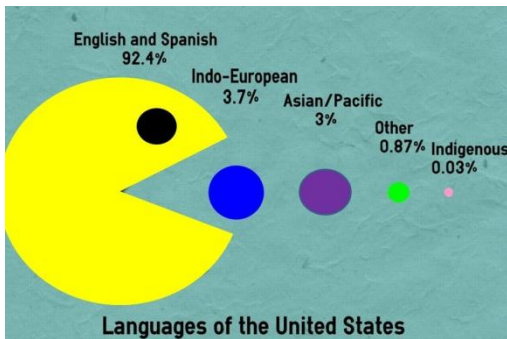
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1. Introduction

The United States has been known as the world's "melting pot" as it combines numerous cultures and languages. While this term originally indicated a positive meaning, in the current era it more accurately represents losing one's culture and native language within the conformity of the "melting pot". The hope is that America will move towards becoming a "salad bowl", where everything is mixed in but is able to keep its own identity. Approximately 337 languages are spoken within the United States, 176 of which are considered indigenous. Compared to the 92% of people in the United



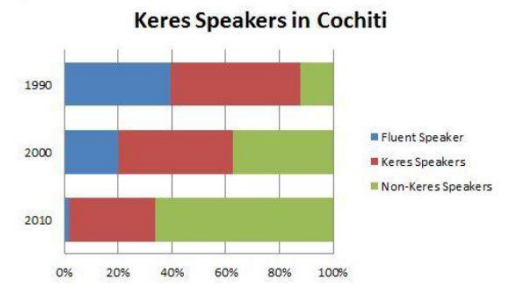
States that fluently speak either English or Spanish, the percentage that speaks any other



language is minuscule. Because of this, media in the United States is dominated by the English language, which impacts the development of children exposed to this media. Minor languages then easily fall behind and are lost to the younger generations in favor of English. With English being the dominant language of the United States, other languages face the possibility of extinction in the near future.

Indigenous languages still exist despite the dwindling numbers of fluent speakers. Within New Mexico alone, there are nineteen pueblos which possess unique cultures and communicate using five distinct languages. Despite the fact that these five pueblo languages have avoided extinction to this date, the future of their existence is threatened. Most of the fluent speakers within these pueblos are members of the older generations. Due to this, the rate at which these indigenous languages are approaching extinction is increasing. The startlingly low number of fluent speakers of these languages indicates a likelihood of them going extinct in the near future.

Specifically our group is working with the Keres language, spoken at the Cochiti Pueblo. Keres is dying out as shown in fewer fluent speakers are being produced each year especially among the younger generations, so much so that there are only 100 fluent speakers left. One of the reasons there is a decline in fluency is that the language is not written down and is difficult to teach due to a lack of access to the language and material on it. Another is that it is challenging to get the younger generation interested in learning it. The English language dominates the media viewed by the members of the pueblo, which is why our project is trying to subvert the English media with a Keres based alternative. Making the cultural media easily accessible to the community at large is important so that it can continue on for future generations both inside and outside the pueblo.



There are already efforts in place within the pueblo to subvert the media. These programs are the two immersion programs, Nest and Keres Children Learning Center, and the Keres classes taught at the local high schools. Our group aimed to enhance the programs already in place by contributing different ideas based in different technologies as alternative ways of teaching. Overall, with the success of our project, we hope that our methods in preserving Keres will be used as a reference to others exploring methods for preserving their languages.

2. Background

We will introduce topics researched in preparation for our project. A brief overview of indigenous languages of the world will be discussed in order to understand the importance and scope of our project. We will then explore different aspects of culture such as heritage and language as well as different ways to preserve a culture if it becomes endangered. Since our project involves the development of ways to utilize technology in teaching language and culture, we will also explain how technology itself impacts how a child learns and develops. In addition this chapter would discuss what methods that the Cochiti Pueblo already has in place in terms of culture and language preservation.

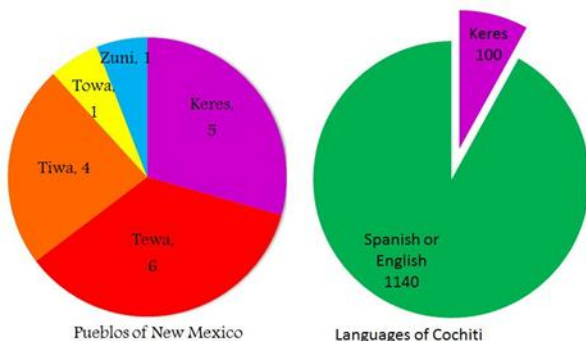
2.1 Languages of the World

Out of the nearly 7000 languages spoken around the world, roughly 2500 are considered seriously endangered¹. It is believed that by the year 2100, between 60% and 90% of all languages spoken around the world will be at risk of extinction². As previously mentioned, approximately 337 languages are spoken in the United States and of these languages, 176 are indigenous. By the year 2050, it is projected that these 176 languages will

diminish to 20³. Based this information, it can be easily concluded that by the year 2100, none of these indigenous languages will exist.

On a smaller scale there are nineteen pueblos in New Mexico and five of them speak Keres, the focus of our

19 Pueblo Languages And Cochiti Languages



nal. N.p., 2011. Web. 16 Feb. 2013.

² Romaine, S. 2006. Planning for the survival of linguistic diversity. *Language Policy* 5,

² no. 2: 443-475.

³ Crawford, J. 2004. *Educating English learners: Language diversity in the classroom*, 5th

³ ed. California: Bilingual Educational Services, Inc.

project. These pueblos are: Santa Domingo, San Felipe, Santa Ana, Zia and Cochiti. All of these pueblos have slightly different dialects, but they can all roughly understand each other. Our group's project focused on the revitalization of the dialect of Keres spoken at the Cochiti Pueblo. Approximately ten percent of the total population at the pueblo is fluent in the language. These numbers are only getting worse because most of these speakers are part the older generation and the younger generation is not learning the language at the rate that they once were. Due to this and the dominance of English language through media in the home, the Keres language is considered an endangered indigenous language.

2.2.1 What Defines a Culture

A culture can be defined as a set of beliefs, values, and ideas that are shared by a distinct group of individuals, allowing them to function as a whole. Over time, cultures are shaped by their effectiveness in enabling a group of individuals to successfully communicate and thrive. It is essential to preserve cultures since they define a certain population's identities and customs. If cultures are lost, the ultimate end result would be all people being defined by one culture, losing the world's individuality.

The preservation of the Cochiti Pueblo's culture is the main goal for this project, but there are multiple aspects that constitute cultural preservation. One major facet of culture is heritage preservation covering the survival of ceremonies, language, traditions, food, etc. A new aspect is the utilization of digital formats to record the heritage and language of a culture so that the information is easily accessible to anyone interested in learning about the culture. A last aspect that we explored is the effort to preserve a culture through child development and learning.

2.2.2 How Spanish Conquest and Pueblo Rebellion Shaped the Culture at the Cochiti Pueblo

Before we look at the methods that have been tried in other cultures around the world, we needed to look at the history and culture in Cochiti itself. The tribe has been living on the land for over a thousand years and has endured colonial excursions from the Spaniards, the Mexicans, and the Americans⁴.

The Spanish came to New Mexico to spread the word of god and take control of the farming people of the pueblos for their own ends. What this meant is that the fundamentals of both the religion and culture were pushed underground, causing the pueblo way of life to become secretive and highly reclusive⁵. It was only after eighty two years of Spanish oppression, tensions boiled over and uprisings began within the pueblos.

The start of the rebellion was due to Spanish hubris and the banding together of the tribes. There were runners that went around with knotted rope from pueblo to pueblo. The rope was to keep track of the days until the revolt. The pueblo was told by the runners on behalf of Popay, a Tewa religious leader and leader of the rebellion, to untie a knot each day, and when all the knots are gone to rise up against the Spaniards. Unfortunately for the people of the pueblos word got to the Spanish governor that a revolt was happening. The date of the revolt was then moved up, and because the Spanish had grown complacent and believed everything to be under control, they were unable to stop the pueblos from taking back their lands. The pueblos drove out the Christian religious leaders and overthrew the families that had been using the people as laborers for their lands. Seven days later 2,500 Native Americans rose up against the Spanish soldiers that had been ruling over their lands and drove them from Santa Fe⁶.

To this day at the Cochiti Pueblo there is a ceremony where all the men run to remember the runners that delivered Popay's message and ropes to the pueblos. In addition they visit the stronghold where the revolt took place in memory of where their pueblo used to be and the history behind what was fought for and lost there. The Keres language still has some

⁴ Benjamin, Rebecca, Regis Pecos, and Mary Eunice Romero. "Language Revitalization Efforts in the Pueblo De Cochiti: Becoming "Literate" In an Oral Society." In *Indigenous Literacies in the Americas: Language Planning from the Bottom Up*, 115-36: Mouton De Fruyter, 1997.

⁵ Romero, Nathan. "About Me and My Language: The Politics of Saving a Vanishing Language." University of Hawaii, <http://www.ling.hawaii.edu/ldtc/languages/keres/>.

⁶ Roberts, D. (2004). *The Pueblo Revolt*. New York: Simon and Schuster Paperbacks.

Spanish words and phrases due to the conquest. Despite the pueblo people being safe and free from this form of oppression, the secrecy from outsiders still remains a part of the culture. Due to this, access to the language and culture of the pueblo is limited, partly causing the decline in the language and culture that is seen today.

2.2.3 Development of Culture After the Cochiti Dam Project



Cochiti is an oral theocratic society that consists of close-knit relationships with the nuclear family being of great importance and a large religious importance placed on the cultivation of the land. Due to it being an oral society, there is no written language, but instead there is a complex system of cultural symbols that are instrumental to the ceremonial calendar. These symbols are incredibly important in the culture because the society is run from the ceremonial calendar by the theocratic hierarchy which consists of a religious leader, a war chief, and a war captain. These individuals supervise and lead the ceremonial life of the community⁷.

The society has been threatened and damaged even more in recent times, despite holding onto their traditions. One of the biggest problems was the building of the Cochiti Dam along the Rio Grande River. The dam created seepage that wiped some of the most sacred sites of the pueblo, removing some of the ceremonies from the ceremonial calendar. Not only did the dam take away some of the ceremony grounds, but also flooded and destroyed much of the farmland. The people of the pueblo are farming people with their own techniques and crops, and by destroying the farm lands this way of life was disrupted for decades. The lack of farmable land caused people to have to relocate to find jobs outside of the pueblo. Due to this certain crafts and techniques that were typically made inside of the Cochiti Pueblo now have to be bought outside of the pueblo for ceremonies and decoration. Also certain crops and

⁷ Romero, Nathan

livestock have to be bought or used sparingly, because it is only recently due to a drainage system that farming has started to return to Cochiti. Relocating families caused the kids that grew up outside the pueblo to come back with modern and urban ideas about community and economic development; many of which went against the traditions of the community⁸. This split in ideas caused some of the culture and language to be lost to the American and Hispanic culture.

2.3 Heritage Preservation

Cultural heritage is a very wide field that can encompass a large number of things. We are considering heritage everything except for the language in a culture. As such this will include dances, food, ceremonies, customs, and artifacts that are pertinent to the culture.

Many methods have been used previously to preserve the heritage of a culture. The most effective and applicable of these methods have involved using a classroom setting to get the children to teach themselves about their heritage by having assignments that involve gathering heritage information. In one such case in Alaska students were given a tape recorder with the assignment of asking elders in the community about their lives and traditional techniques of hunting and cooking and of asking family members how recipes have changed over time⁹. The researchers then took the recordings and added them to a database so that all of the students could hear what the others had come up with. This method is still young, but it is showing a growth in the interest the children are showing about the traditions of the culture.

Another major aspect of preserving a heritage is physically preserving what is already there. Preservation of older items, such as dresses or pottery is almost as essential as teaching the younger generation how to create items similar to these. This part of heritage preservation is typically done in a museum setting with many trained professionals making sure that the pieces are all properly taken care of. Even with all of the techniques that have been learned

⁸ Benjamin, 1997

⁹ Barbaran, Francisco Ramon. "Cultural Preservation Program for Alaska." *Interchange* 42, no. 2 (2011): 205-14.

over the years, pieces are still decaying and new digital methods are being used to keep the pieces safe¹⁰.

An important cultural part of preserving these pieces is preserving the methods for making them. Many of the methods and techniques used in making heritage items are starting to be lost in the pueblos, but have very strong cultural significance and need to be preserved as much as the items themselves¹¹.

Specifically at the Cochiti Pueblo, the library has a photo archive database possessing over two thousand images. These images range from various years and are the main form of documentation for all ceremonies, clothing, etc. Therefore this is an important resource to the people of the Cochiti and those wanting to learn about the heritage of the pueblo.

2.4 Keres Language Preservation

Language is a vital part of the identity of any culture and keeping it alive is a key part of any cultural revitalization endeavor. Language preservation is dynamic as it is always changing as new methods are tested. Many of the popular methods of language preservation start and end with children. School classes and immersion programs that speak only the native language are some of the most popular methods at the moment, but each of these methods have certain benefits and flaws¹².

School classes are incredibly popular for learning the major languages of the world, but they are not particularly popular when it comes to the smaller languages. This is because the teachers of the classes are typically non-fluent speakers of the language that they are trying to teach. In the case of smaller Native American languages, many of the classes are taught by second language teachers, which isn't exactly conducive for the children who are supposed to

¹⁰ Evens, Tom, and Laurence Hauttekeete. "Challenges of Digital Preservation for Cultural Heritage Institutions." *Journal of Librarianship and Information Science*, no. 3 (2011), <http://lis.sagepub.com.ezproxy.wpi.edu/content/43/3/157>.

¹¹ Benjamin, 1997

¹² Hinton, Leanne. "Language Revitalization and Language Pedagogy: New Teaching and Learning Strategies."

¹² *Language and Education* 25, no. 4 (2011): 307-18.

be learning¹³. Ideally the elders would be the one teaching a language, but they are typically not the teachers of language classes for multiple reasons.

One of the major reasons that the elders don't teach is that schools typically want to have the classes adhere to the format used by the classes for major languages¹⁴. The format is one focused on visually



seeing the grammar and vocabulary of a language and then speaking it out, typically written and oral exams, however this won't always work. Keres, for example, can't use the major language format because it isn't a written language and has major cultural meaning behind it. It would be kind of hard to have students see a language that isn't written down, but that doesn't mean that it can't be taught.

Instead of having the language classes adhere to the traditional format, the format would have to be changed to suit the language. In the case of oral societies, such as Keres, the class would need to be specifically designed so that the learning would consist of visual associations instead of written associations. That way students will connect a word in Keres to an image or action instead of to a word in English and then to the image or action. This format is harder to design though, so most teachers don't even bother trying.

2.5 Keres Programs Today

There are many different types of language programs and language levels at the pueblo and in the Santa Fe community. Keres classes also range from pre-school immersion to high school language classes, encompassing all different ages and proficiencies in Keres.

The Nest program at the Cochiti Pueblo is an immersion program that focuses on children under three years of age. The program provides daytime child care for the people of the Cochiti pueblo in the Keres language. This is especially helpful for parents that do not know

¹³ Hilton, 2011

¹⁴ McCarty, Teresa L. "Native American Youth Discourses on Language Shift and Retention: Ideological Cross-Currents and Their Implications for Language Planning." *International journal of bilingual education and bilingualism* 9, no. 5 (2006): 659-77.

Keres, but wish for their children to have a strong foundation in the language and the native culture.

The Keres Children Learning Center is a Montessori school offered to the children of the



pueblo. Like the Nest program it is an immersion program, but also has a focus on teaching basic reading and math skills. The school is a pre-kindergarten program offered to children five and under. Children are encouraged to go at their own pace while learning both the language and the culture. The school is only taught in Keres, and incorporates

stories and music from the Cochiti pueblo and native people.

In the pueblo there is also a Head Start program for elementary school students. The school is not an immersion program, but it does offer Keres classes every year to the students. One of the issues seen at the high school level is that this program does not work in conjunction with the local high schools.

The beginner Keres classes at the high school level are not an extension of the classes taught at the elementary school level, but rather a repeat of what the students have already learned. Our project is mainly focused on the classes offered at the Santa Fe Indian School. The school program consists of two years of Keres to fulfill the language requirement put forth by the school and the pueblo. The school is hoping to soon add a third year to the curriculum, which would focus on the creation and application of Keres learning media and community involvement.

The second school that we looked into was the Bernalillo High School. They offer four years of Keres classes. One of the main differences between these two schools is that the classes at the Bernalillo High School are not immersion classes. Meaning that while the students at Santa Fe Indian School never have English spoken in the Keres class, Bernalillo has both languages spoken in the classes and have Keres written down.

All of these programs are especially important to all the parents who want their children to be exposed to and learn Keres, but don't necessarily have all the knowhow and tools to teach their children themselves.

2.6 Digital Tools in Cultural Preservation

Digitization has become an incredibly popular way to try to preserve a culture's heritage and language. This popularity is in large part because of the ease of access and the ease of development of cultural databases¹⁵. People are easily able to look up any of the information that they want from the comfort of their own home and in many databases, people are able to add their own updates to entries.

Digital databases are very versatile in their capabilities. They can hold pictures, words, sounds, or videos. This is particularly important since not all cultures are the same. Some as in the case of the Cochiti Pueblo are oral societies with no written language. Databases can deal with this fine since they can have audio and video with very little need for written word. Or as in the case of the Cree language they can be mostly written in a multilingual format involving the major languages spoken by the tribe.

Many preservation attempts have already been started involving digital databases. One such case involved the Cree culture mentioned earlier. The goals of the databases were to preserve the oral traditions of the culture while also making it accessible to all. This was set up by having many different recordings of the elders speaking in multiple languages recounting their memories and stories. Also, the written sections of the database had pull down menus allowing the user to choose one of four languages, including English, spoken by the tribe. After the database was set up the proctors started holding training classes on database maintenance and sound editing so that it could easily be updated after the proctors left¹⁶.

¹⁵ Junker, Marie-Odile, and Radu Luchian. "Developing Web Databases for Aboriginal Language Preservation." *Literary and Linguistic Computing* 22, no. 2 (2007): 187-206.

¹⁶ Junker, 2007

Another example of a database preservation attempt, this one user updated, was done in Alaska¹⁷. In this case, as mentioned earlier, kids in the tribe would bring home tape recorders and document recipes and stories from their elders, and after they turned the assignments in the recordings were put into a database so that the recordings could be accessed by all of the students and parents. The students were then allowed to keep the tape recorders so that they could continue to record their elders and add the recordings to the database.

Even with all of these uses and conveniences there are a few things that need to be remembered when building a database containing cultural artifacts. First is that only so much can actually be digitized and that quality matters in the digitization process. A 3D model will be better than just a picture, but you can only hold a few of them between space available and the cost needed to produce each one. Another thing to keep in mind is the sorting of the database. Structuring stories and artifacts is incredibly important so that users can actually find what they are looking for. Tags such as those used by libraries to sort their collections are incredibly useful: things like maker, storyteller, keywords, and circa dates. Lastly, intellectual property rights come into play in some of the methods and artifacts depending on how recently they were made. The owners and makers need to give consent for their works or property to be on the web¹⁸.

2.7 Child Development and Cultural Preservation in the Pueblo

Child development and its link to cultural preservation is very important if a culture is to survive. Children are learning in many new ways and their knowledge of a culture is what will keep it alive. But learning methods are changing and children are using technology in new and different ways. Fifty years ago children would learn through a book and a teacher who was a supposed expert, but now children are learning through the internet¹⁹. YouTube and Wikipedia are two of the top five websites around and they both are overflowing with learning materials

¹⁷ Barbaran, 2011

¹⁸ Evens, 2011

¹⁹ Means, B. "Technology and Education Change: Focus on Student Learning." *Journal of research on technology in education* 42, no. 3 (2010): 285-307. 20

that kids are using every day. Just because they aren't traditional methods doesn't mean that they aren't what's being used²⁰.

This is important to cultural preservation because databases seem to be the popular way to try to preserve a culture and children are typically the targets of the databases. But kids are never going to use the databases if they aren't set up in ways similar to YouTube and Wikipedia. The most successful looking preservation projects involving databases are the ones that have interactivity in them or videos²¹.

This is because children respond positively to fun on the computer. Kids reading skills drastically improve if they spend time on the computer watching videos or searching the web²². The successful databases have these kinds of interactivity, but in the language that they are trying to preserve. This method works both by improving reading skills in the language and by immersing the child in the language and culture.

Immersion is incredibly important in having a child learn about a language and culture. It has been proven to be the most effective way for children to learn about a culture²³. Popular methods of immersion have typically been language classes and immersion programs where students and teachers will all be speaking in a designated language to better learn how to use it.

²⁰ Collins, A., and R. Halverson. "Rethinking Education in the Age of Technology: The Digital Revolution and the Schools." *New York: Teachers College* (2009): 1-11.

²¹ Wang, Feng, Mable B. Kinzie, Patrick McGuire, and Edward Pan. "Applying Technology to Inquiry-Based Learning in Early Childhood Education." *Early Childhood Education Journal* (2009), <http://link.springer.com/article/10.1007/s10643-009-0364-6/fulltext.html>.

²² Bowers, Alex J., and Matthew Berland. "Does Recreational Computer Use Affect High School Achievement." *Association for Educational Communications and Technology* (2012), <http://link.springer.com.ezproxy.wpi.edu/article/10.1007/s11423-012-9274-1/fulltext.html#Sec3>.

²³ Hilton, 2011

3. Methodology

As mentioned earlier, Cochiti Pueblo members have established Keres Language programs at the Santa Fe Indian School, the Bernalillo School, the Head Start program, the Keres Children Learning Center, and the Nest program to aid in their children's learning of the Keres language. These classes immerse the various age levels of students in the Keres language along with cultural aspects of the Cochiti Pueblo. The goal of our research and work while in Santa Fe is to provide these different grade levels with innovative and technologically dependent methods of teaching the language. This chapter describes the exact methodology used in creating and implementing these learning tools in a way that has a lasting effect on the population of the Cochiti Pueblo, resulting in the accumulation of a Keres Language Channel. This process included:

- 1) Developing ideas for the creation of culturally relevant media.
- 2) Producing examples and media models specific to the Keres language and culture.
- 3) Demonstrating learning tools to teachers and students through the creation of tutorials and offer guidance for new concepts.
- 4) Creating a website and a hub of Keres language learning tools.

3.1 Developing Culturally Relevant Ideas



In order to create culturally accurate media for the Cochiti Pueblo, it was necessary to immerse ourselves in their culture. Without an understanding the traditions of the Cochiti people, our new media would not have been geared towards them and what they want. In addition to making our media accurate, cultural immersion also prevented us from creating media that was in any way offensive to the Cochiti people. The more accurate the media, the more receptive the people would be, especially

the elders. Many of the elders would probably not have approved of our media if it did not align with their beliefs and traditions.

To achieve cultural immersion, our group visited both the Cochiti Pueblo and a number of the schools where Keres is taught. At the pueblo, we interacted with many members of the community, hearing personal stories about traditions and history. We experienced Feast Day cooking methods, dancing for the Easter holiday, and other various traditions all of which could be incorporated into our media. At all of the various Keres schools, we observed typical classroom routines and also surveyed the students on different topics.

3.1.1 Visiting the Pueblo

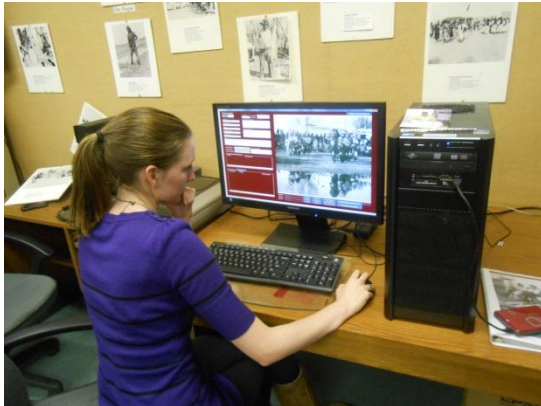
One of the most important aspects of engaging ourselves in the culture was spending time with the people of the pueblo. In addition to teaching ourselves about pueblo life, we also established close relationships with many people there making us more personally invested in the project. By interacting with the Cochiti people and hearing the Keres language, we were able to understand the importance of preserving their culture and language. We also developed a true understanding of the language and the limitations we faced in creating media that captured it fully. After hearing Keres extensively, we understood its complexity with its various breaths and throat noises in addition to words. We therefore had to ensure that our media did



not rely on the language being written down. We learned this after visiting the Montessori school in particular. For example, the word for the phrase “I Love You” is not pronounced as it is spelled in Keres. When our group members tried pronouncing the phrase as spelled out, we were told we were saying a different word entirely. The ending “ma” sound is actually

a breath rather than spoken but must be included in the spelling since it is still a part of the phrase. This experience showed us that it was important that whatever we created for our project must be audio based, in order to properly capture the language.

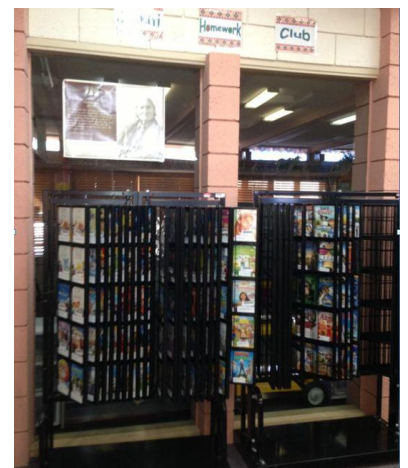
In addition to gaining knowledge solely on the Keres language and culture, our group made observations directly pertaining to the logistics of our project. While at the pueblo, we were able to visit various buildings including the governor's office, church, and library. Most



important to our visit was the Cochiti Pueblo Library since that was where the photo archive was located. We had full access to all of the photos within the archive that ranged from the 1800s to the present day. In the same room as the photo archive, there was a file cabinet full of hand drawn sketches

organized by categories. Many of these sketches were culturally related, such as depictions of various ceremonies and attire. Other sketches were of food, sports equipment, times of day, and weather, among others. After discovering these sketches, we decided to use these in our project to retain cultural accuracy and specificity. We determined that both flash cards and animated movies could both be made from the sketches. These sketches were a huge turning point in the process of deciding what media to create since they opened up many new opportunities and ideas originally restricted to us. With these sketches, we were able to achieve cultural accuracy while respecting the no picture taking or sketching rules of the Cochiti Pueblo.

Also in the library, we found a DVD library possessing hundreds of popular children's movies and TV shows. All of these DVDs are readily available for residents of the pueblo, but they are all in English. While at the pueblo we were also able to observe the young children there and what they like to do for fun. Besides playing outside, we noticed that a lot of the kids watched television, in particular cartoon shows such as Spongebob Squarepants. These two observations inspired our group to incorporate published media into our project. Since a majority of



children (including those at the pueblo) enjoy television and movies, we decided to take the existing English media and turn it into readily accessible Keres media.

3.1.2 Observation in the Cochiti Schools

We were able to sit in on Keres classes to properly understand the current curriculum at all grade levels allowing us to get a feeling for what was needed to improve what was currently being done. The interaction with the students allowed us to gain an understanding of what most interested them with respect to learning Keres and in general. Specific observations were recorded in each classroom setting such as: what part of the lesson seems to engage the students the most, what part engages the students the least, were the students ever on their cell phones or doing other homework at a certain point in class, how many times were certain words repeated, how often the teacher and students spoke respectively, and what kind of teaching methods were used in the curriculum presently.

We were able to sit in on Tony Herrera's Keres class at the Santa Fe Indian School first. While there we discussed our involvement with the class and established the degree of cooperation and involvement for both Mr. Herrera and his high school Keres students. Initially our group was going to be the sole creators of the Keres learning media, but after talking with our liaisons and the students themselves we decided to involve the high school students as well. As mentioned previously, the school currently only requires two full years of Keres for students from Keres speaking pueblos. Matt discussed with us a student interested in developing a third year of Keres education into the curriculum, focusing on a more project-based approach as opposed to a classroom setting. This idea was then conjoined with our initial project goals, but now included involving the high school students creating their own media as well. This was possible due to the fact that at the Santa Fe Indian School computers possessed programs needed for the media production.

In addition to sitting in on the Keres classes at the Santa Fe Indian School, we also sat in on one Keres class at the Bernalillo High School. While there we were able to get recordings for various Keres words from both Lorencita, the Keres teacher, and her class. We also took the observations we made from the Bernalillo High School and compared them to the observations

we made at the Santa Fe Indian School. By visiting both of these high school Keres programs, we were able to gain a clear understanding of how Keres was taught in general. We then took these observations about how Keres is taught and used them to formulate ideas that work in conjunction with the uniqueness of the language.

In addition to observing current classroom routines, we also gave the students surveys in order for them to be able to confide in us secretly about their current Keres class and just general questions about life at the pueblo. These surveys were given to students at both the Santa Fe Indian School and the Bernalillo School in order to get a complete scope of opinions. The questions asked were:

- 1) What things do you like/dislike about Keres class now? Try to be as specific as you can.
- 2) Would you be interested in a third year of Keres offered at SFIS? If so, what would you like the content of that class to be?
- 3) What topics would you like to learn most about in Keres class?
- 4) How often do you use Keres outside of the classroom? If so, who do you speak it with and where?
- 5) How fluent do you feel you are in Keres?
- 6) Do you have a smartphone? If so, do you have internet/ a data package?
- 7) Do you have computer access at home? If not, where do you have computer access?
- 8) Do you have any previous experience with creating media that you could use in this project?

These questions were specifically chosen in order to understand various aspects of the students' lives. In order to improve the current Keres class curriculums, we asked the students what they currently like from the class and what they did not like. This aided us by showing us what already engaged them in the class and what parts disinterested them. Also by asking what kind of cultural aspects they would be interested in learning about, we were able to determine what to include in our demos paired alongside learning Keres.

In addition to questions concerning the Keres class, questions about home life and access to technology were necessary. In order to better understand where technology in Keres

was usable, we asked the students about their access to smartphones and the internet. This was crucial for our project since we needed to know what kind of media outlet would be most accessible for a majority of the pueblo. The final question concerning experience with creating media helped us to understand what knowledge the students already have with certain technologies. In order for our project to succeed, we need to be able to teach the students to create their own media once we leave. Therefore it was necessary to know what they already knew how to do so that we could determine the best way to teach them.

3.2 Creating Keres Language Media

With the feedback we gained from our last objective, we took everything we learned and made culturally accurate demos in relevant media forms. These demos would then be the initial resources to populate what would become a hub for Keres media that would be filled over time with more creations. In order to get the most out of our project, we took results from the surveys in order to utilize the most accessible technology for the students. We decided to initially create learning demonstrations to show the Santa Fe Indian School to gauge interest and show them what media they will be working with. After brainstorming various ideas we narrowed down what media forms would best work for the Keres language in a way that would allow us to easily incorporate aspects of their culture.

After a lot of ideas were discussed and tested out, three concrete media forms were decided as the main focus of our project due to their high potential of working well in conjunction with the Keres Language. These three media deliverables are:

- 1) Interactive audio flash cards
- 2) Keres dubbed popular cartoon shows
- 3) Animated childrens' stories

Along with scans from the archive digitized and preserved, to be used in conjunction with the animations and flash cards.

3.2.1 Creating Interactive Audio Flash Cards

One media specifically targeted at helping the high school students in studying for their Keres classes were the audio flash cards. Flash cards are known to be easy to create study aids, used in all kinds of classes. Normal paper flash cards would work for other languages such as Spanish or French but with Keres being an oral language, audio flash cards would be more successful.

To be as culturally accurate as possible, our group utilized the abundance of line drawings located at the Cochiti Pueblo Library in a file cabinet. These drawings were all organized by categories, making it easier for us to use them for various sets of flash cards. In order to use the sketches, our group had to scan the paper sketches onto a hard drive to digitize them. Once we had all the necessary sketches (separated by category), we then had to locate an appropriate website that allowed us to customize the flash cards to the extent that we desired.

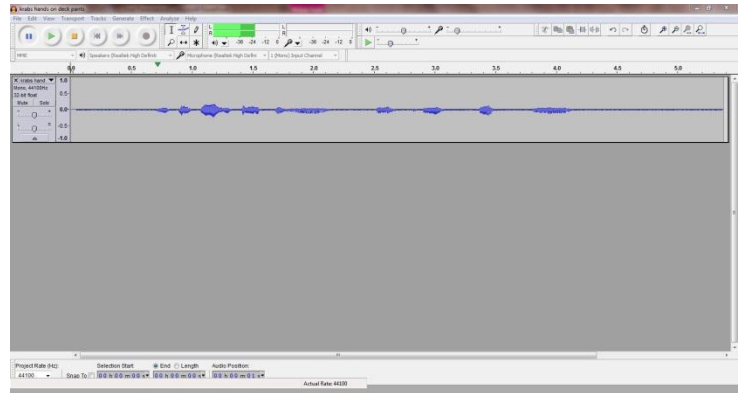
The flash cards that we created ended up being hosted on our website. These flash cards were made by taking audio files recorded from the teachers and students of the Keres classes and the line drawings from the file cabinet in the Cochiti Public Library. These files would then be uploaded together onto the website. The flash cards would then appear on the website as the images we upload along with the English translation, and by click on the card the audio file would play.

3.2.2 Dubbing Cartoons in Keres

One resource we decided to use as a major component of our website and YouTube channel were dubbed cartoons. We dubbed a range of different movie clips and cartoons to reach a variety of audiences and to populate the YouTube channel that we created for the pueblo more fully. To create these Keres dubbed videos, we used two programs, Audacity and Adobe Premiere.

Audacity is a free audio-editing program that can be downloaded to your computer. In the program, you can upload your own audio and basically edit it anyway you need to, such as

normalizing voices and eliminating background noises, making this useful for dubbing. We used Audacity to edit the Keres voiceovers that we obtained from the Keres teachers, Matt Pecos and Tony Herrera as well as the students at the Santa Fe Indian School. We edited all of the audio we gained from voiceovers by eliminating all background noise and setting them all at the same noise level. These files were then exported as individual audio files to a hard drive.



Meanwhile, we obtained videos on dvds bought at various stores and ripped them onto our computers using a program called Handbrake. This program allowed us to pick and choose different scenes from a DVD and rip them so that they became MOV files which are easy to use in Adobe Premiere. We transferred these MOV files to Adobe Premiere to edit out the existing audio from the original video so that we could add the voiceover files. With the file now consisting of just video, Premiere easily allowed us to add the voiceover files right over the existing video file so that the Keres matched up with the video to make it seem as realistic and in sync as possible. Within Premiere, we then were able to edit the video and audio files by trimming, cropping videos, and adjust sound quality as needed.

The first Keres dubbed video we made as a demo was the pilot episode of the Spongebob Squarepants television series. We decided to choose Spongebob as our first cartoon due to the popularity of the show and age of ranges that it targets. The show is well known and highly recognizable, therefore is an ideal first demonstration of our projected Keres channel. Once we obtained the episode and the script, we gave Tony Herrera and Matt Pecos the script so that they had time to translate the English into Keres so that the voiceovers would take less time. When they translated the scripts, we were then able to record the entire episode with both Matt and Tony providing the voices for the various characters. We had them record each line individually until the entire script was completely dubbed in Keres. All of this was done in Audacity.

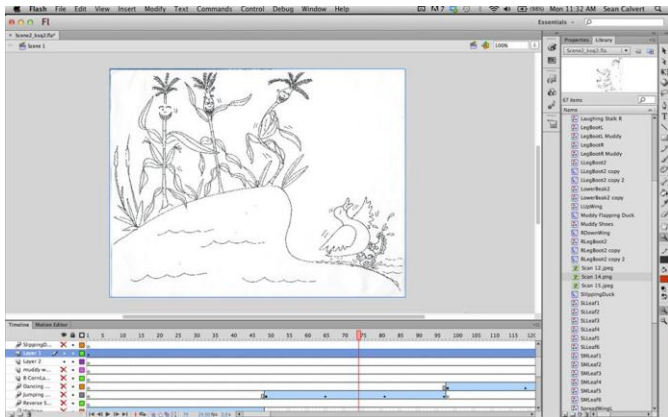
All of the audio was then transferred to Adobe Premiere, where the Spongebob episode had already been stripped of its original audio. The newly recorded audio was lined up with the Spongebob episode, aligning it with the video so that the Keres phrases matched closely with the characters' lips moving. Within Premiere, we also were able to edit the sound if any additional editing needed to be done such as adjusting pitch or speed or eliminating background noise. Once the entire episode was edited and matched up perfectly, we were able to save and export this file so that it was one finalized file.



3.2.3 Animating Children's Stories

In addition to dubbing animated movies/tv shows, we also produced our own media using Adobe Flash. Instead of starting completely from scratch (drawing everything ourselves)

we decided to use more of the sketches found at the Cochiti Pueblo Library. Many of the stories and songs of the Cochiti Pueblo were sketched out and placed in the file cabinet there, making it convenient for us to use the multiple scenes of drawings in order create an animated movie.

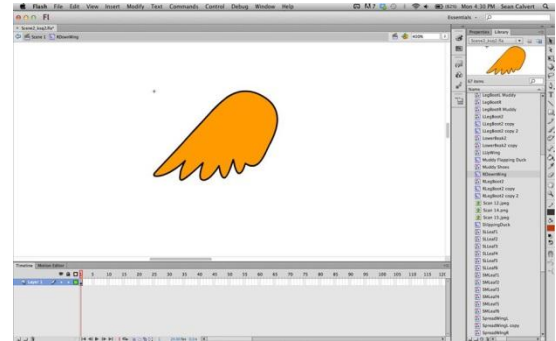


To start creating these films we first took all of the scanned lined drawings and organized them in order of the story and got the actual spoken story. We consulted Tony Herrera and Matt Pecos on the translations of the stories so that we would be able to keep the animations as culturally accurate as possible.

We then took the organized line drawings and put them into Adobe Flash. These acted as the bases for all of the animations we created. We used the drawings to then define the

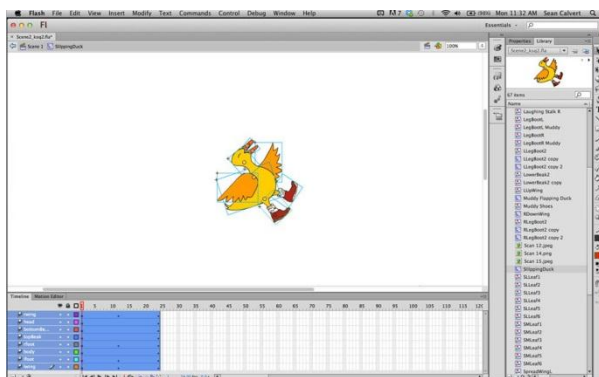
backgrounds and the characters of our films. Each drawing's background was essentially one scene for our purposes. But the background and the characters were only on the scans at this point and we needed them to be in the program. So to create our digital backgrounds we traced over the lines of the background and proceeded to color in the newly created backgrounds to match the environment of the pueblo.

The characters were a little more complicated. For the characters we traced each individual body part that we wanted to move and created what are called symbols. Symbols are movable objects in Adobe Flash, so with these different body parts created as symbols we were then able to create the characters in packages.



Packages are groups of symbols that you have put together to create a combined image, in this case the character. We had to go trace and create the packages for each different view and movement of the characters in the stories. For example, we created a thirty second long animation using a popular story from the pueblo and the duck had six different packages that, when put at the proper points in the stories matched up with the line drawings.

But we weren't done with the packages yet. While there was no actual movement in the



line drawings, there was implied movement, which we had to create. To do this we had each of the packages do a specific type of movement like walking or jumping, depending on what the character was doing at that point in the story. These movements were created by taking each of the individual symbols in the packages moving them to

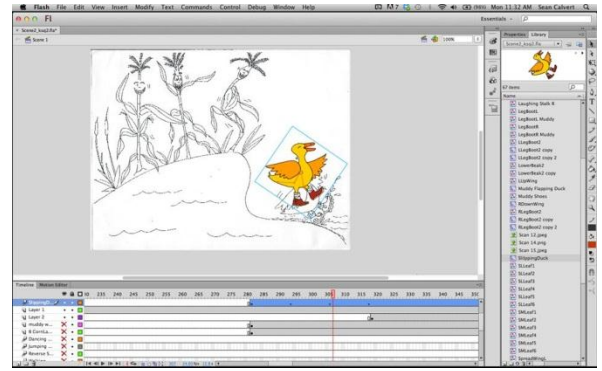
match the type of movement. As such, the walking duck had eight different moving parts that made when completely animated made it look like he was walking.

We then took these animated packages and put them into their corresponding places in the story to match the background. And then we matched their movement on the background to how they would actually be moving across a stage. Doing this lets the packages continue the

animations that they were supposed to do while also moving against the background. The final animations were then exported into Adobe Premiere.

In Premiere we added in audio files that recounted the stories and songs. These audio files were recorded by those young and old among the pueblo.

Whatever matched the mood of the story. Once these audio files were added into Premiere as well, we had a complete animated story with audio and video.



3.3 Demonstrating to Teachers and Students How to Create Their Own Media

With the completion of our own creations, we knew it would be essential for the progression of our project to teach members of the Cochiti Pueblo how to make their own media. Creating a few examples ourselves only goes so far in achieving a complete library of Keres media, but by teaching the local population we leave behind a greater possibility of achieving a substantial end goal that can ultimately lead to the preservation of Cochiti's language and culture.

3.3.1 Teaching Students at the Santa Fe Indian School



To lay the foundation for educating the people of Cochiti on how to create their own media, we decided to teach the Cochiti Keres class at the Santa Fe Indian School that we had already been working with. We asked permission to take up class time to demonstrate extensively how to use various programs such as Audacity for audio editing, Adobe Premiere for video editing, and Adobe Flash to create animations. These were the programs we ourselves used to make our

own media, therefore it was important that these programs be carefully explained to the students. Fortunately all of the above programs were readily available at the Santa Fe Indian School for the students to use at their disposal.

Once the students had a grasp of how to use these programs, we broke them up into different groups depending on whether they wanted to work on the animations, the flash cards, or dubbing cartoons. For the flash card group, we gave them a word list of about 500 English words and gave them time to translate these into Keres. With these translations completed, they recorded themselves using the Audacity program and edited their voices as we taught them. We then took the completed recordings, matched them with some of the previously mentioned sketches, and then added them to our Cochiti Speaks website as final products.

The students working with the animations were initially given sketches and symbols, backgrounds and character body parts, already drawn into Adobe Flash to allow them to color



the sketches themselves and gain a feel for how the program works. Once they played around with it for awhile, they worked in conjunction with us to make their own entire animation depicting a popular Cochiti song. The students were able to successfully color new sketches, animate their own movie in Adobe Flash, and add their own Keres audio to the movie using Adobe

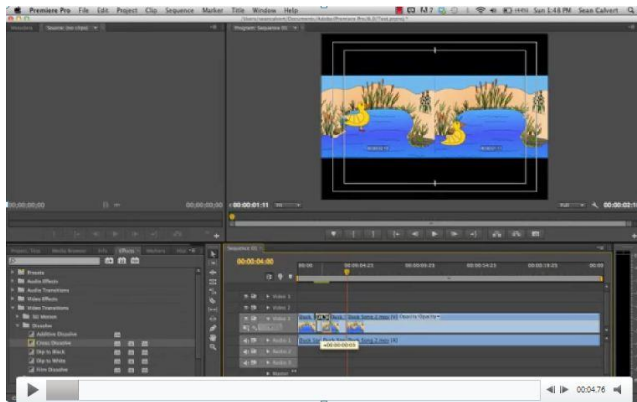
Premiere.

For the students dubbing a cartoon, we chose an episode of *Spongebob Squarepants* and gave them the English script to translate into Keres. They chose which roles they wanted to play within the cartoon depending on their comfort level and whether they wanted to change the pitch of their voice for a specific character. Initially this form of media took awhile for the students to get used to and comfortable with, but after some practice they began to have fun with playing the characters and messing with the audio. If any of the students had trouble translating an English phrase into Keres, they asked either Tony Herrera or Matt Pecos, the teachers, for accuracy. The students were able to gather all of their audio and edit it, but

unfortunately since dubbing cartoons is a timely process especially for new users, they were only able to upload the audio in Premiere and not finalize it while we were in Santa Fe.

Fortunately, Tony Herrera the teacher of the class has decided to continue the production of these media tools within his class. The students working on dubbing Spongebob will therefore be able to complete their productions by the end of the school year. Students working on the other two medias will also have time to create more. We received excellent feedback while working with these students and teachers and could see that the students were learning by working on these projects by having to translate so much English into Keres. Seeing the success and interest from working with the students, we realized we needed to create tutorials so that we could continue teaching interested members of the Cochiti Pueblo even after we leave. Overall, this experience was rewarding both for the faculty and students at the Santa Fe Indian School and for us as a group.

3.3.2 Leaving Behind Tutorials



To ensure that the students and the other interested members of the pueblo could continue to create their own media we left behind tutorials on how to create all of the different forms of media. These tutorials were created using a screen capture program called Camtasia. This program

records whatever is going on your computer's screen while also recording anything that you say into your computer's microphone.

This allowed for us to run through each of the programs that we taught the students during the class. Some of these lessons were quite long though so when we created these tutorials we decided to split them up by the different aspects of the program that we were covering. Whatever we taught to the students during the class needed to be record so that if they forgot any aspect of a program they would be able to simply go and watch the specific

tutorial for the specific part of the program that they needed. They would also need to all be accessible, so we decided to include these in the YouTube hub and website that we were creating.

3.4 Creating a Hub of all Keres Media

Once we created all of the above media and tutorials, our group realized that we were lacking a viable location to store all of them so that they were easily accessible. Many different ideas were considered due to the availability of various routes we could have taken. Ultimately, we factored in the actual availability of certain technologies to the majority of the people of Cochiti along with ensuring that our technology was private. After consideration, we determined that a website localized on the Santa Fe Indian School server linked with a privately owned YouTube channel would be the most beneficial and realistic for the needs of the Cochiti Pueblo.

3.4.1 Creating the Cochiti Speaks Website and YouTube

During the early stages of the project, we considered adapting the Tewa Talk application, a project from a previous year, into a Keres version. The Tewa Talk application allowed a user to record themselves speaking Tewa and upload the recording with an English translations from their smartphone. In addition, the application was intended to have flash cards and games to be used as study tools, but they were only non-functional mockups. Finally, the application only runs on the Android operating system, which meant that the adapted application would have a limited user base. After we found out that only a few students in the Keres class at the Santa Fe Indian School had smartphones that ran Android, we realized that the application would not be ideal for our needs. Instead, we decided to make a website that would be accessible from any kind of smartphone and any computer with internet access.

The design of the website was performed using Adobe Dreamweaver, a program intended to make website design easier. It allowed us to easily modify the layout and features of the site while the software wrote an abundance of the code for us, saving valuable time.

We were considering a number of features for the website based on Tewa Talk. We knew that it was necessary to allow the uploading and viewing of recordings, but the design of the viewing methods changed during the project. Originally the recordings were going to be displayed in a grid layout, separated by category. There would also be a separate page for the viewing of flash cards that were created separately from the dictionary side of the website.

As we continued working on the website, we realized that the separation of the flash cards and browsing feature was an unnecessary redundancy, as the grid layout was essentially an uglier version of flash cards. The grid layout for the browsing was scrapped in favor of using the database to create flash cards and displaying them on the browsing page. The complete list of entries wasn't totally removed however, it was moved to a less noticeable part of the site.

One of the other uses of the website we realized the potential for was hosting the video content we were going to be creating. Since the videos were to be hosted on YouTube, we decided it would be worth the minimal effort to create a page or two to embed the videos on.

4. Results and Analysis

Through the application of our methodology, we were able to gain the results we sought. We gained knowledge from our visits to the Pueblo and classes along with information crucial to the success of our project. Without this information, our project would not have been as successful as it was. Every language is different in how it can be successfully taught, and without the information gained and the school surveys we took we would not have been able to create effective teaching methods.

Most of our results came from our created demos as part of our second objective. We decided to create multiple variations of each type of media in order to help populate the Hub and website. By doing this, we left behind a plethora of options and examples for the children of the pueblo and students at the Santa Fe Indian School to choose from.

Our group not only left behind shows and animations, but also how to videos on how future classes and teachers can make their own dubbed movies and animations. This final step

was very important to our project because it allows for media to be continuously created and updated and our project to be successful in the long run.

4.1 Immersion in the Culture and Language

Part of our project was about getting involved in the community and really immersing ourselves. Part of that experience has been learning some of the language from the classes, the elders, and the kids that we interacted with at the pueblo. We managed to learn how to say the typical greetings of the pueblo. In English it would be:

Hello. How are you? I am fine and you? I am also fine thank you. You are welcome.

We also learned how to say in Keres: I love you, puppy, sounds good, and grandmother bluebird.

(image bern with students)The greeting we learned from sitting in on the classes, because it is customary to greet each other every morning before class. Although this is the most useful phrase the most meaningful Keres we learned in terms of our time spent in Santa Fe is, "Shroh-tse-ma da-oo Shreesh". Which translated means I love you grandmother bluebird. Shreesh became our group's pueblo grandmother based on all the time we spent in her home and with the Nest program at the pueblo. She also offered a wealth of information about pueblo life in general since she has experienced and lived through much of what we can only read about. She is not only important to our project, but to her family since she is the matriarch and therefore in charge of all the traditions and ceremonies for her family.

For this reason it was very exciting when the women in our group got to learn from her firsthand how to make the foods for the feast day. To bake in the adobe ovens, the men are sent out into the hills to gather firewood in order to heat the adobe ovens. Each house's ovens are hand made by the women in the pueblo, and are stone and mortar structures big enough to cook seventy five pounds of bread. The bread was made by mixing large bags of flour, sugar, salt, and other ingredients in large metal bins.



The dough is then taken out, put in balls, and allowed to rise. Once the bread has risen, the ovens are lit and the dough is kneaded into round balls. These balls are covered with lard and cut into different shapes. The points on top of the bread are made so that the bread lasts longer in the traditional stews that are made for the feast. The dough is then put in pie tins and covered to rise for the last time before being put in the oven.

While the bread was raising the women in our group also got to make the Baquettes, this is the pueblo version of an old Spanish cookie. There are no measurements or written recipe, just knowledge from the matriarch of the family on how to make them. All of the different houses within the pueblo make and design their cookies in different ways, based on how their mothers taught them. Once the cookies are cut and arranged they are placed on metal trays to be loaded into the ovens with the bread.

The ovens are deemed ready only when the inside of the oven goes from black to the tan of the adobe brick. This means that the oven is so hot that the soot and smoke cannot stick to it. The traditional white corn of the pueblo is then thrown onto the wood and set on fire. This white corn has become sacred to the people since it is used in the stews of the feast day, but is dying out due to the decline in traditional farming brought on by the flooding of farmland due to the construction of the dam. Once the corn is done cooking the oven is then cleaned out of all wood and ash, and wiped down with a wet rag. This allows for the bread to be loaded and the oven to begin cooling, so it does not burn the bread. The bread and cookies are loaded in for an hour and allowed to cook until golden brown.

During the two days that the women are preparing the food, the men are preparing for their part in the ceremony, which is the running with a “shinny stick”. The “shinny stick”, which has no real translation into English, is a little stick ball that is passed by the men on their runs. There are two groups of men that race from the pueblo, kicking the stick to draw bad spirits and evil from the pueblo. They go up into the hills and through the woods to a sacred site that only the men know about and hold a ceremony of their own. This tradition started after the time of the pueblo revolt in order to remember the runners that warned the people and brought news of the plan.

The men then return to the square and are greeted by the women. The men and women then go to their homes to prepare for the ceremony and change into their costumes and ceremonial outfits. During this time the women are not allowed to enter the square without being in their moccasins, dresses, and shawls.

4.1.1 Cochiti Cultural Preservation

The Keres language is tied very close to the culture at the Cochiti Pueblo, which is why in an effort to preserve the language it was very important to preserve the culture as well. One of the ways our group did this was to take archival scans available in the library and digitize them. Many aspects of Cochiti culture such as food, clans, animals, and weather are hand-drawn sketches were available only at the Cochiti Public Library. These sketches are organized by category with multiple copies of each sketch in order to preserve each one successfully. In order to better preserve these sketches, our group decided that digitizing these sketches by scanning them into folders on a hard drive would help ensure that the sketches would endure over time. While using these sketches in other aspects of our project, we also added these sketches to the digital archive we created to in addition to the existing pictures. With these sketches scanned onto a computer, they can be used in the future for other purposes such as digital coloring for some of the pueblo children and more media production with respect to our project's outcome. One of the main reasons that digitizing these images was so important was because of the rule against picture taking and sketching inside the pueblo. What this means is that these sketches are some of the few depictions of traditional dance attire and food that are available. Not only did digitizing the images preserve them throughout time, but it also allowed these images to be shared with the students at the Santa Fe Indian School that might not otherwise get to see them.

Our group not only got to experience the history of the pueblo on paper, but was invited to participate in an ascent to the top of the mesa where the original Pueblo once stood before the Spanish came. This opportunity was open to all Cochiti Pueblo members and all Cochiti

students were excused from school for the day. We used the Go-Pro camera to document the journey up the mountain and capture our surroundings in this once in a lifetime experience.

In order to allow all members of the Cochiti Pueblo, present and future, to experience this momentous occasion we were able to add the video gained from the Go-Pro to the existing archive. Adding video to the picture archive allows the viewer of the archive to experience the history and culture of Cochiti in an entirely new way. In addition, this is the first time this ascent has taken place at the pueblo and it probably will not occur every year. By recording the experience, we will be able to immortalize it for everyone to see. The video will also allow those who have not traveled, or could not have traveled to the mesa to be able to view such an important landmark in Cochiti history and culture.

4.2 Observations from the Classes

Since Keres is an unwritten language the classes that our group sat in on had to come up with different methods to teach the language. There are no Keres textbooks in any of the classes, so they teach according to the calendar year. This means that the classes are focused on time and ceremonies during the year. The classes also start with a conversation and

introduction, but this varies a little based on the class.

For instance at the Santa Fe Indian School they started with how they are and what they did that morning, but at the Bernalillo school they talked about what they are wearing and where they are from. The Bernalillo school also uses word to picture association along with English to Keres translations. The Nest, Montessori, and Santa Fe Indian School programs use no English at all; since they are both immersion programs. We found that the kids learn better in these programs because they are able to learn other life lessons and subjects all while speaking in Keres. Even though it is still immersion there are still

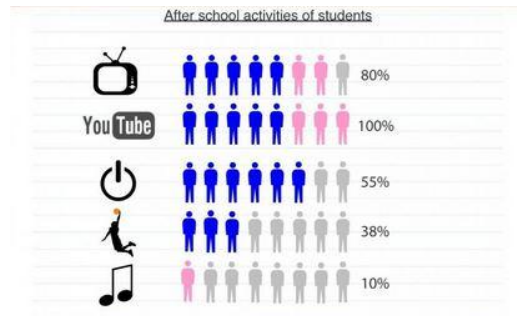


books read to the students that are written in English, but are read in Keres.

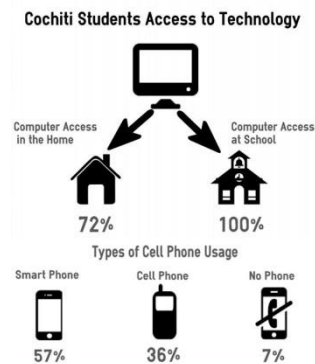
Another difference is that unlike the rest of the programs the Santa Fe Indian School does not have its own classroom and is only offered for the mandated two years. They are hoping to expand soon to offer additional years of class, but the only thing is that the lesson is already repetitive. Part of the reason our project is important is because they are hoping to make the third year about integrating technology and Keres into the school system, and we are bringing some of those tools to them.

4.3 Survey Results

We surveyed the students in the Keres classes to see what kind of activities they were most interested in. This included what they did in their spare time as well as what interested them most. We found out that a lot of the male students in the class enjoyed video games and sports. Specifically the males really wanted a hunting game that mimics what they do in the pueblos already. The females also enjoyed video games, but were also interested in music and maybe a cooking channel with traditional Keres ceremonial dishes. This input was important to our project because it let us know what kind of media would be most effective and engaging for the students.



We also talked with the students to see what level of access to technology was. We found out that a lot of them have access to the computer, both at home and at school. A majority of the students also have phones, but just half are smart phones. For this reason we



made a website that holds all of the information and samples that we made. The website is also compatible with mobile phones, so that all students with smart phones can access the site from anywhere they have internet access.

Once we had some prototypes done it was also important to survey the students again to see what their reaction was to our ideas. This was how we were able to count out machinima as a viable option due to student and teachers' reaction to the different worlds and

difficulty with making the movies. This also gave us the idea to have the students make their own media and share it with the younger children in the pueblo.

4.4 Flash Cards

Scans from the archive in the library, mentioned earlier, and sound bites taken from the teachers and students of the Keres class were put together on the website as flash cards. These



flash cards were created so that when the students are at home they have a form of media that they can practice Keres with, without having to rely on written notes. This will also allow the students to check their pronunciations without having to rely on having a more fluent speaker in the room.

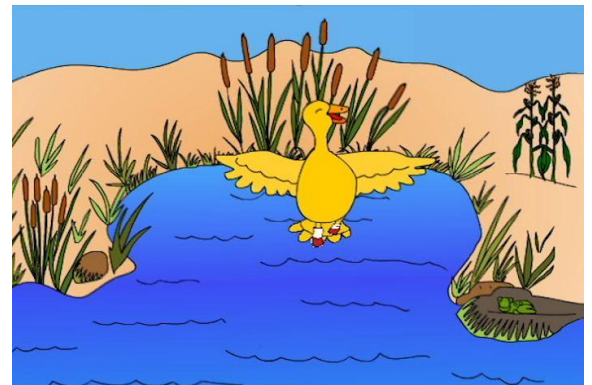
The students and teachers also are able to upload their own audio and images to create their own flash cards. This will

ensure that the flash cards are always up to date with the class lessons, as well as being added to and expanded upon.

4.5 Turning Traditional Stories into Animated Movies

When the people of the Cochiti pueblo line up for ceremonies, they sing a song called the duck song. It is a song in Keres that only members of the community who participate in the dances know. In English it goes like this:

The duck splashes in the pond
The duck splashes in the pond
He has mud in his socks
He has mud in his moccasins
The corn is laughing at him



So he goes back in the pond

What we then did is take this song in Keres and make it into an animated video. We did this for three reasons. One, so that we could implement some of the traditional scans and learning tools that they are already using in the immersion programs into modern day media. Two so that the parents of the kids who participate in the dances and other members of the community can learn the song and be able to understand and participate without having to take part in the dances. And third, so that the Nest and Montessori classes could show these videos to their students.

This song was also used as a tutorial and learning tool for the students at the Santa Fe Indian School. They were shown how to animate and create videos based on a song that they already knew and were able to develop an idea of other traditional stories and songs that they could convert into these animations.

This process was repeated two more times using a traditional story and song. The story was the Fox and the Prairie Dog. This story, like the duck song, was also taken from the archive at the pueblo. It is a short story about a Fox who wants to hurt the Prairie Dog people. Luckily, two of the Prairie Dogs overhear the Fox's plans to hurt them at the next dance. The two Prairie Dogs run back to the pueblo to tell Eagle, their chief. While practicing for the feast day dance, Eagle brings all the Prairie Dogs together and tells them that during the dance when he gives the signal everyone must scatter. When the Fox tries to harm the Prairie Dogs he is unable because he can not understand Keres, and therefore the Eagle's signal. Although these two animations are similar in many ways they differ slightly in the way they were created. While the duck song focused greatly on animating and perfecting the duck character, the Prairie Dog story focused on animating the background to move instead of the characters.

The last animation created for this project was based on a quail song. This song unlike the others was not taken from the archive, but was instead sung to us when our group visited Bernalillo High School. The song is sung to children in a couple of the pueblos, and is about a quail with a large stomach. Our group used this song to teach the students at Santa Fe Indian School how to edit audio and add in their own images. Even though we did not create every

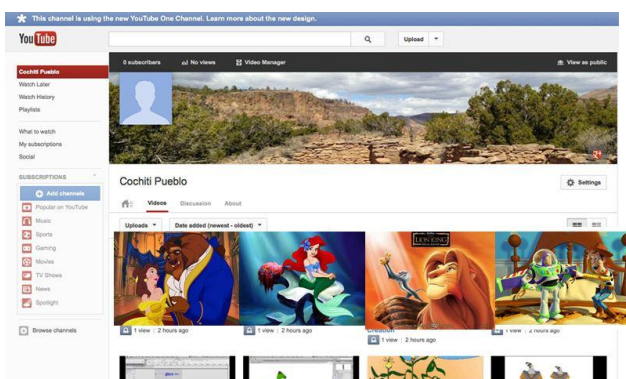
aspect of this animation, it is still an important result of our project. There were a couple reasons for this. One of which being that a large part of our project was making sure that others could add on to and grow the video archive that we made, and another is that this is another way in which our group was able to take a part of the culture and bring it in a new and interesting way to the people of the pueblo.

4.6 Dubbing in Keres

Dubbing played an important role in the subversion of the American culture in the pueblo. To do this we first started with a show that we knew from our observations that the children of the pueblo were already watching: SpongeBob. The success of our project stems from the children and students wanting to learn the Keres language, which is why, even though SpongeBob is not the most educational of media, it was chosen for our project, because the kids wanted to watch it. If they were watching Spongebob in Keres in their households instead of in English it would add to their immersion in the language. To dub the SpongeBob DVD it had to be first ripped, digitized, using Handbrake. This video file was then uploaded to Premiere for video editing purposes. Scripts were then taken from online for the show and were handed out to various teachers and students that would be playing the voices of the different characters. Audacity was used to both record and manipulate the audio files to sound as similar to the characters as possible.

We also wanted to take traditional movies, such as Disney classics, and translate them into Keres so that they would never be outdated. Due to our time constraints we were unable to do this, but we did make a trailer montage so that people following us could get an idea of what we are trying to move towards, and maybe get some ideas of what to record themselves. We also planned for other children's shows that are more learning based so that we could use

media that is already designed to teach kids a language and have that language just change from English to Keres. Examples of these shows would be *Sesame Street* and *Dora the Explorer*,



among others. These shows are still popular on TV and would work to subvert English media, but would be more likely to be used by parents, over SpongeBob, due to their educational roots.

4.7 Website

The first feature of the website implemented was the ability to upload audio recordings. An HTML form was created that allowed a user to input an English translation, an audio recording, a picture, a description, the gender of the speaker, and the category of the recording.

An upload script was created so that upon clicking the upload button, a PHP script would check that the fields were not empty with the exception of the description field. In addition it checked that the audio and image fields contained files of the correct format. Following that the images and audio files were put in the upload folder on the server, and the information from the form and the path to the images and audio files were inserted into the MySQL table titled recordings.

The page for browsing through flash cards was the next key feature. On the page are accordion style content panes for each category, which expand to show the pane selected and compress all the others. The flash cards were displayed by calling a script that would perform a query of the recordings table for the category selected and then display the image, the translation, and controls for playing the audio. Underneath that were controls for cycling through the flash cards.

In order to maintain and ensure the quality of the materials on the website, a number of administrative tools were added that could only be used by users with appropriate permissions. The ability to update or delete entries is only available to administrators. This was done so that any kind of uploading error or inappropriate upload might be removed, without opening the system up to abuse from general users.

The need for privacy necessitated a security system that would ensure the privacy of all the images, audio, and videos on the site. This was done by creating a MySQL table that

contains usernames and passwords. Each page contained checked if the user was logged in. If not, they would be redirected to the login page and prompted to enter a username and password. When they attempted to login, another script would attempt to locate the username and password in the table. If found, it would allow the user to login and direct them to the homepage of the site, otherwise it would inform them the username or password was incorrect and prompt them to try again.

The final feature of the website implemented were pages that displayed the videos created during the project. The Keres Tube page contained embeddings of all the dubbed cartoons and animations on the YouTube channel. Similarly, the tutorials page contains embeddings of the tutorials created using Camtasia.

4.8 Tutorials

Our group spent a good part of our time in Santa Fe at the Indian School teaching the students. Instead simply creating media our group wanted to make sure that our project continues and thrives. Seven weeks is not enough time for four people to subvert English media in all of Cochiti. Building up the kind of archive that we need takes a lot of time and a large amount Keres based media. By enlisting the help of the students, not only do we get the help we need to populate the site, but we also are encouraging the high school students to learn the Keres language in order to dub the movies and make flash cards.

The last thing that our group did before we left was make tutorials for the students and teachers. These tutorials show the step by step process on how to make the same kind of media we created. To do this we used a program called Camtasia. Camtasia is a screen capture program that lets you record what is happening on your computer screen while allowing you to talk over the recordings and includes the recordings in the final video. This is especially important for showing how to create the animations and dubbed cartoons.

The tutorials demonstrate how to use our main programs including Audacity, so that the students and teachers will know how to get new voice recordings for the dubbed media. We then used Camtasia to make a tutorial for Adobe Premiere so that the students and teachers would understand how to do the final editing necessary for completing the animations and

dubbed movies. Then we created step by step tutorials on how to manage all the components of Adobe Flash. This included: how to turn a line drawing into an image, how to isolate and animate individual parts, how to color in the different sections, and finally how to put everything together to make an animation.

All of the software that the students need to make the media is on the computers at the Santa Fe Indian School, but has not been utilized. Part of this has been a lack of understanding on the students and staffs, and partly on how powerful and useful this technology can be when utilized correctly. That is why it became a vital part of our project to leave behind not only examples of what kind of media people can create, but also how to do it. This will allow for future students and educators to continue our work, and add to the video archive, when we are gone.

5. Recommendations for Expansion

Even with all of these tools that we created there are many more methods that can be pursued to create more accessible, but still culturally relevant media. One of these methods would be to adapt the website that we created into a phone application. This would allow people with the application to browse the dictionary anytime they have an internet connection, but, more importantly, it would also allow people to play games and compete with other people using the flash cards. Users would also, ideally, be able to record from their phones and match those recordings to pictures from their phones so that the database could continuously be added to using appropriate pictures.

Another avenue to pursue would be building upon the animations that we created and going a step further and use 3D animation. There are two ways to use this appropriately. The first would be to use machinima like we mentioned earlier. There would be more time to be able to find or create an appropriate world and time to find decent characters. As mentioned earlier, the problem that we ran into with machinima was that there was no time to create an acceptable world, but there could be time to create one in the future.

The second method using 3D animation would be to do the same thing as was done with the Adobe Flash but instead utilizing Maya by Autodesk. This would be a much more intense

process of 3D animation, but the results would typically be better and more accurate to the story than machinima could be. It would be very time consuming to create the stages and the characters and it would probably take even longer to animate it, but the end result would be worth the effort.

Another addition to our project is the creation of GIFs that would be used to record traditional artifacts. These could be done by filming an object placed on a turntable, something similar to a pottery wheel would work. The artifact would be placed on the table and then recorded while turning so that there would be a full 360 degree view of the object. This would allow future generations to get a full view of the artifacts that are recorded this way and not just one view like still images provide.

Another expansion to our project could be the localization of video games and movies. This would allow for people to play their favorite games or watch their favorite movies with Keres voiceovers on all of the audio. This would be a very challenging because it would be costly and would require interaction with the studios and publishers, but hopefully this project has created enough interest in Keres language media that something could be worked out by the pueblo.

Over time these other methods could be implemented along with what we have already left behind. All of these different forms of media production, when mastered, would allow for Keres to easily subvert English as the dominant language of media in the pueblo.

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Appendix

Appendices A. Numbers

One

Two

Three

Four

Five

Six

Seven

Eight

Nine

Ten

**Add more numbers (to
29, 10's, 100's, 1000-3000,
1 mil)

Days of the Week

Saturday

Sunday

Monday

Tuesday

Wednesday

Thursday

Friday

Time

Day

Week

Month

Year

Minute

Time

Clock

Future

Past

Present

Ancient time

Morning

Afternoon

Evening

Sunset

Sunrise

Night

Midnight

Today

Tonight

Tomorrow Night

Tomorrow Morning

Next week

Next month

Next year

Last week

Last month

Last year

Yesterday morning

Yesterday night

Day before yesterday

Night before last

Late

Early

What time is it?

It is 4 O'Clock

4:15

4:30

4:45

**How to say times of the
day

Colors

Yellow

Red

Pink
Green
Blue
Brown
Orange
Purple/Violet
Gray
Black
White
Rainbow (multi-color)
Colors

Human Body

Hair
Head
Eye
Nose
Mouth
Teeth
Tongue
Eyebrows
Eyelashes
Chin
Beard
Ears
Neck
Back of neck
Back
Stomach, belly
Heart
Blood
Liver
Shoulders
Chest
Bellybutton
Elbow
Hand
Fingers
Thumb
Arm
Buttocks
Body
Leg

Thigh
Knee caps
Feet
Toes
Intestines
Bone
Ribs

Kinship Terms

Mother
Father
Grandmother
Grandfather
Paternal Grandmother
Uncle
Friend
Husband (or man)
Wife (or woman)
The Better Half
Love you
Love you, mother
Love you, father
Relatives
Great-Grandfather
Great-Grandmother
Older Sibling
Younger Sibling
Mother's Older Sister
Father's or Mother's
Younger Sister
Father's Older Sister
Father's or Mother's Older
Brother
Father's or Mother's
younger Brother
Nephew
Elderly Male
Elderly Female
Granddaughter
Grandson
Mother-in-law
Father-in-law
Godmother

Godfather
Godchild
Daughter-in-law
Son-in-law
Midwife
Wedding Sponsor Mother
Wedding Sponsor Father
Child (son or daughter)

Animals

This is a...
This is a dog
Dog
Bear
Cat
Bird
Deer
Rabbit
Skunk
Horse
Eagle
Frog
Bug
Raccoon
Snake
Chicken
Crow
Hawk
Fish
Owl
Turkey
Buffalo
Spider
Wolf
Mouse
Elk
Coyote
Fox
Beaver
Otter
Gopher
Turtle
Lizard

Bat	Ground, Earth	People
Bobcat	Religion	Woman
Chipmunk	Medicine man	Man
Cow	Medicine woman	Child, little one
Donkey	Jesus	Baby
Fawn	Church	Boy
Ground hog	They are drumming	Girl
Mole		Little Girl
Pig	Materials & Items	Teenage Girl
Pony		Little Boy
Rat	Buckskin	Teenage Boy
Sheep	Cloth	Boss
Squirrel	Hide	Old man
Mountain Lion	Blanket	Old woman
	Buckskin shirt	Chief
Weather & Seasons	Moccasins	Elders
	Beads	Children
Spring	Scissors	Deceased
Summer	Needle	White people
Autumn	Thread	Indian people
Winter	Feathers	Black people
It's a cold day	Canvas	Mexican people
It's a warm day	Hooves	Asian people
How's the weather	Shells	Person with mixed
The weather is good	Metal	ancestry
The weather is bad	Outfit	Indian Man
It is going to rain	Head dress	Indian Woman
It is raining	Breech cloth (g-string)	White man
It is snowing	Belt	Mexican
It is hailing	Shawl	English
It is windy	Necklace	
It is sunny	Bells	Indian Tribes and Pueblos
The sky is dark	Rattle	
The sky is cloudy	Bow & Arrow	Santa Clara Pueblo/person
The sun is setting	Tablita	from Santa Clara
The sun is rising	Kilt Cloth	Laguna Pueblo / person
	Manta	from Laguna
Feast Day/Ceremonial	Jewelry	Cochiti / person from
	Earrings	Cochiti
Creator	Bracelets	Nambe / person from
Great Spirit	Barrette	Nambe
Truth		Ohkay Owingeh / person
Dream	People	from Ohkay Owingeh
God		Taos / person from Taos

Picuris / person from Picuris
San Carlos Apache
Jicarilla Apache
Pojoaque / person from Pojoaque
San Ildefonso / person from San Ildefonso
Santa Ana / person from Santa Ana
Santo Domingo / person from Santo Domingo
Tesuque / person from Tesuque
Acoma / person from Acoma
Isleta / person from Isleta
Jemez / person from Jemez
Navajo / Navajo person
Sandia / person from Sandia
San Felipe / person from San Felipe
Zia / person from Zia
Zuni / person from Zuni

Greetings

Hello
Greetings without translations
Welcome to our home
How are you?
Hello, how are you?
I am fine
Have a nice day
Thank you
I love you
Where are you from?
I am from...
I am Tewa from...
Where do you live?
Are you Indian?

Do you speak Tewa?
What is your name?
My name is
What is your family name?
Fabio (man's name) is my name
You speak Tewa very well
I do not speak Tewa well
I am glad to meet each other
See you later
Good Morning
Good Afternoon
Good Evening
Good Night
Goodbye
See you later

Kids phrases

Mother, I love you
Father, I love you
I love my grandma
I love my grandpa
I am happy
I am hungry
I am thirsty
I want some water
I am scared
I am angry
He hit me
She hit me
I like that kid
I don't like that kid
You stink
Who farted?
This is funny
This is fun
I want to go play
I want to play ball
I want to play with my friend
I want to play dolls
I want to watch TV

I don't want to go to school today
I am not feeling well
I forgot to do my homework

Daily Phrases

Yes
No
OK
Thank you
Bless you (sneeze)
Wake up
I need to use the bathroom
Where is the bathroom?
Wash your face
Brush your teeth
Comb your hair
Eat your breakfast
Feed your brother and sister
Go to school
What did you learn today?
Do the work your teacher gave you
Did you finish your homework?
Go play outside
Who are you playing with?
What's your friend's name?
Come inside the house
Don't talk to anyone you don't know
Be polite
Respect your elders
Clean your room
Help me in the kitchen
Behave
Stop arguing
Please
Thank You

You can have it
You cannot have it
Don't
You are a good girl
You are a good boy
You are being a bad girl
(spoiled)
You are being a bad boy
(spoiled)
I hate you
Forgive me
Turn off the television
Come eat dinner
Help me clean the table
Help me with the dishes
Help me with the laundry
Help your dad
Help your dad outside
Held your dad inside
Go to bed

About Food

Are you hungry?
I am hungry
I am not hungry
Come to eat (group)
Come to eat (single
person)
I want something to eat
Food
Can I have some food?
Do you have any food?
What do you want to eat?
What do you want to
drink?
Is there anything to eat
here?
You don't have to cook
I want some water
I want some food
I want some potatoes
I want some bread and
butter

I want some eggs and
bacon
I want some green beans
I want some vegetables
I want some fruits
I want some meat
I want some hamburgers
I want some frybread
I want some cake
I want some pie
I want some desserts
I want some coffee
I want some cold drink
I want some candy
I want some ice cream
Pass the salt and pepper
Please give me the beans
Please give me the...
The beans are very good
The food is great!
The food is not so good
This is a good restaurant
to visit
The service is terrible
Garbanzo
Red & Green chile
Chico
Potato Salad
Oven Bread
Tortillas
Jellos
Piki Bread
Tea
Indian Tea
Salad
Yams
Sugar
Wild Spinach
Wild Parsley
Tobacco
Atole
Choke Cherry
Salt
Apple

Peach
Melon
Lard
Oil
Butter
Fried Bread
Flour
Blue Cornmeal Mush
Corn
White Corn meal
Cornmeal
Posole
Corn Tortilla
Potato
Bread pudding
Oven bread
Pear
Meat
Pumpkin
Plum
Prune
Strawberry
Watermelon
Stew
Soup
Tamale
Onions
Dough
Tomato
Beans
String Beans
Peas
Chicos
Egg
Milk
Spinach
Apricots
Carrots
Cherries
Grapes
Beets
Fresh Corn

Nature

Tree	How much are you asking for it?	hairdresser
Flowers	That's a lot!	rainsash maker
Bush	It's worth it	leggings maker
Branch	How long did you take to make this?	Pilot
Leaf	I'd like to buy it	Writer
Rainbow	Let's make a deal	artist, photographer
Sun		highway/construction worker
Moon	Milestones of Life	basket-maker
Star		mechanic
Sky/Heaven	Birth	Chauffeur
Cloud	Death	Doctor, nurse
Mountain	Graduation	Dances
River	Young Adults	
Lake	Old Age	Bow and Arrow Dance
Ocean	Marriage	Slow Evening Dance
Universe	Initiation	Harvest Dance
Prairie, Flat land	Baptism	Black buffalo Dance
Arroyo	Divorce	White buffalo Dance
Ditch		Corn Dance
Boundary	Occupations	Yellow corn Dance
Land	Warchief	Matachine Dance
Field	policeman	Turtle Dance
Hill	blacksmith	Deer Dance
Hole	Shoe repairman	Social Dance
Meadow	seamstress	Cloud Dance
Road	belt-maker	Comanche Dance
Cliff	banker	Dog Dance
Cave	Dance costume maker	Eagle Dance
	Teacher	Butterfly Dance
Tribal Officers	Cook	Directions
	farmer	
George Rivera is the Governor of Pojoaque	salesman	He is going...
Joseph Talachy is the Lt. Governor of Pojoaque	welder	Where are you going?
	silversmith	I am going...
Market	potter	South
	Engineer	North
Money	Priest, minister	East
He paints pictures	Baker	West
He makes pretty work	rattle-maker	Horizon
She makes beadwork	fireman	Left
He makes baskets	carpenter	Right

Up
Down
In-front
Behind
Near
Far