

# Technology-Based Curriculum Development in Native Language Learning: How Computer-Assisted Cultural Education Supports Contemporary Native Youths

Haley Tuttle

*Linguistic and cultural education supports the success and well being of Native youths in contemporary society. Many Indigenous communities struggle to stimulate interest among young pupils to learn their Native language and ancestral heritage, suffering from detrimental losses of Indigenous knowledge as a result. Technology-based methods can generate appealing, engaging and educational lessons for Native youths to encourage student participation in learning and creating linguistic, culture-based material. Especially fascinating is how this work contributes to an Indigenous group's effective Nation Building concepts and practices, by nurturing future tribal leaders through educational means. This piece explores the integration of Omaha-specific technology-based materials into the Umó'ho' Íye Language and Cultural Center's language lab curricula, examines how these efforts support the center's preservation and revitalization endeavors, and analyzes how this work reflects effective, and tribally-specific Nation Building.*

Native students sit in a language and culture class, held within a room that reflects a traditional Omaha earth lodge, with wood beams supporting the high dome-shaped ceiling, and relevant materials such as buffalo hide and Omaha-patterned quilts furnishing the walls. The classroom has been utilized for over a decade for administering Omaha language and culture-based lessons, but now students engage in a more modern method of knowledge acquisition. The classroom provides access

to individual laptops, which afford the ability to engage students in computer-based projects that encourage them to work directly with Omaha language and cultural material. Students can type in the language with a specialized keyboard, record words and phrases in their Native language, analyze their speech patterns, and utilize each individual computer activity to create full-length movies, or digital storybooks with audio, images, text, and video. These projects enhance student participation and promote student-Elder and community relations. The activities produce an especially significant outcome in the initiative and leadership qualities of the students as they learn to complete new technology-based tasks; valuable lessons for youth who will become the future leaders of their Omaha Nation.

The introduction of computer-based language and cultural lessons to Omaha language and culture classes was a four-month endeavor accomplished during the Umó<sup>h</sup>o<sup>n</sup> Íye Language Media Research and Development (ULMRD) Project. The project took place in collaboration with the Umo<sup>h</sup>o<sup>n</sup> Nation Public School's (UNPS) Umó<sup>h</sup>o<sup>n</sup> Language and Cultural Center (ULCC) on the Omaha Indian Reservation in Macy, Nebraska. The center was established as UNPS's Title VII Indian Education Program in 1996, and has since aspired to promote language and cultural knowledge to empower tribal sovereignty and self-determination through the re-assertion of tribal identity and Indigenous knowledge. Chief collaborator and project co-leader is the center's director, Ms. Vida Stabler. Our research explores viable resolutions for implementing technology-based methods to develop effective language and culture-based material for Omaha youth education. Our work promotes the legitimacy and importance of this knowledge for future generations, and considers how this work contributes to the survival, perpetuation and building of the Omaha Nation.

## **Linguistic and Cultural Education in Nation Building**

Indigenous groups worldwide are implementing successful methods and practices to sustain and strengthen community economic and social resources. To understand the efforts that generate success in language

and cultural endeavors, one must understand how this work reflects effective concepts and successful methods in building Indigenous nations. Dr. Stephen Cornell and Dr. Manley Begay, both well-known authorities on the subject, discuss the components that define and detail the significance of Nation Building.

In an interview with the University of Arizona's *ArizonaNativeNet* telecommunications center, Cornell and Begay were asked to describe and express Nation Building. Dr. Begay explained that there are five key ingredients to successful Nation Building practices: "sovereignty (genuine self-rule), effective institutions of self-governance, cultural match, strategic orientation, and leadership." He continued, saying that Indigenous communities must develop capable governing institutions that match their cultures to successfully build their Nations.<sup>1</sup> Dr. Cornell affirmed Begay's statement declaring that Indigenous Nations need to exercise their sovereignty and work on rebuilding their Nations themselves. Cornell defined Nation Building as identifying the tools of governance that Indigenous Nations need, and putting those tools that match their community needs and interests in place to "create the futures they want for their people."<sup>2</sup> There are numerous language and culture-based educational efforts within Indigenous communities that represent Nation Building practices at work. They recognize Nation Building assets, such as leadership, which when coupled with the development of capable institutions, are successfully developed and implemented through culturally appropriate means.<sup>3</sup> These principles, behaviors and assets are demonstrated within the Omaha community and in other reservation societies as well. The Osage Nation in Oklahoma for example, implemented self-governance through tribal council proceedings to develop a new Constitutional Osage government. The advancement would strategically position language revitalization as a community priority, promoting programs that reflect Osage cultural values, and facilitate community collaborations to implement Osage knowledge

---

1. *ArizonaNativeNet*, See [www.arizonanativenet.com/](http://www.arizonanativenet.com/) (January 2012)

2. Ibid.

3. Ibid.

acquisition programs and activities. These efforts contributed to youth development by emphasizing a sense of community, self-confidence, success and well being. These actions also demonstrated the re-assertion of tribal sovereignty and contributions to Osage Nation Building.

Ongoing discourse in the literature, and in mainstream society acknowledges the perception in and outside of Native communities that emphasizing Indigenous knowledge education, as opposed to professional and Westernized education, may inhibit students from successfully competing in mainstream society. Perceptions also argue that the continued rejection of assimilation into mainstream culture by tribal communities obstructs tribal economic progress.<sup>4</sup> My compiled research suggests that Native language and traditional Native culture are important to the success of both Native individuals and Nations in contemporary society. Indigenous knowledge retains culturally-specific worldviews that effect and influence behaviors, ways of thinking, and ways of being for individuals of that culture. The ULMRD Project promotes lessons that provide individuals with personal fulfillment, not only in creating original language and culture-based computer projects, but also in understanding, and taking pride in their culture-specific identity as they work with the material.

Umó<sup>h</sup>o<sup>n</sup> Íye Language and Culture class curricula aspires to motivate students to assert the legitimacy in their Omaha heritage and take pride in speaking Umó<sup>h</sup>o Íye. The lessons contribute to building the Omaha Nation by preparing Omaha students with a strong and positive identity as Omaha Natives, in order to develop the capacity to contribute to Omaha society.

---

4. Gregory Cajete, *Look to the Mountain: An Ecology of Indigenous Education* (Durango, CO: Kivaki Press, 1994); Mary Hermes, "The Scientific Method, Nintendo, and Eagle Feathers: Rethinking the Meaning of 'culture-based' Curriculum at an Ojibwe Tribal School," *International Journal of Qualitative Studies in Education* (13:4 2000), 387-400; Michael David McNally, "Indigenous Pedagogy in the Classroom: A Service Learning Model for Discussion," *The American Indian Quarterly* (28:3 2004), 604-617; Vine Deloria & Daniel Wildcat, *Power and Place: Indian Education in America* (Fulcrum Publishing, 2001).

## Background and Research Developments

Umó<sup>h</sup>o<sup>n</sup> Íye (Oo-ma-ha Ee-yae), or Omaha language, is a Native language of North America. While this language is in critical danger of disappearing over the next generation, it has survived centuries of encroachments by European contact, colonization and Western influence. Umó<sup>h</sup>o<sup>n</sup> Íye continues to endure within the Omaha community. The value that Omaha language and cultural knowledge provide the Omaha people merits consideration due to the significance of modern preservation and development methods for the Omaha and Indigenous communities worldwide.

Factors that led to the current status of the Umó<sup>h</sup>o<sup>n</sup> language are multi-faceted. Some of the issues contributing to the decline of Umó<sup>h</sup>o<sup>n</sup> Íye use within the community include progressive language and cultural loss throughout colonization. The experiences of older Omaha generations that endured boarding school education, which forcibly instructed students to replace aspects of their Native identity with Westernized educational and cultural values, has also contributed to Omaha cultural dilution. These damaging effects have perpetuated into present-day communities where negative outlooks on Indigenous languages and cultures often discourage youth from acquiring Native knowledge. Solutions to language and cultural loss include novel pedagogical language acquisition methods and contemporary and technology-based efforts to Indigenize education, while focusing on youth development to contribute to building Native Nations.

## Research Community

The Omaha have inhabited Nebraska lands since the early nineteenth century. Francis La Flesche, who was an advocate for recording and documenting his Umó<sup>h</sup>o<sup>n</sup> Íye language during the late nineteenth and early twentieth century, provides an account in *The Middle Five* explaining that Umó<sup>h</sup>o<sup>n</sup> Íye comes from the “Dhegiha group of the Siouan language.”<sup>5</sup>

---

5. Francis La Flesche, *The Middle Five, Indian Schoolboys of the Omaha Tribe* (University of Wisconsin: 1963), viii.

Omaha ancestors once resided in the Ohio valley among other tribes of Siouan dialects, the Ponca, Osage, Kansas and Quapaw tribes about 400-700 years ago.<sup>6</sup> The Umó<sup>n</sup>ho<sup>n</sup> people migrated westward towards the Mississippi where the tribal groups began to separate.<sup>7</sup> They later moved from the Plains area's eastern edge to northeastern Nebraska, and through an 1854 treaty with the United States they ceded lands and continued to move north to "what is now Burt, Cuming, and Thurston counties about 80 miles north of the city of Omaha."<sup>8</sup>

Currently, there are only ten to fifteen fluent speakers of Umó<sup>n</sup>ho<sup>n</sup> Íye in the community - less than one percent. Many additional community members are active listeners who are familiar with Umó<sup>n</sup>ho<sup>n</sup> Íye. Some possess conversational skills but do not consider themselves fluent speakers. The ULMRD Project addresses this decline in language use among Omaha people, specifically youths, and the fact that children are no longer "being born into households where Omaha is their birth language."<sup>9</sup> The project content is Umó<sup>n</sup>ho<sup>n</sup> Íye specific, but some of the resources, methods and materials demonstrated in the project's activities may also be useful models for other Native communities.

## **Researcher Role**

I am a non-Omaha individual, and outsider resident of the Omaha Reservation and Macy community. My role as project researcher and ally to the community entailed establishing and maintaining a trusting relationship with the center, UNPS and greater Omaha community throughout project work. I concentrated my research work on the linguistics of Indigenous languages and technology-based language acquisition methods, evaluating the benefits of language and culture-based education for Native youths and tribal communities. ULCC was in need of

---

6. Omaha Nation Public Schools, *About the Omaha People*.

See [http://teacherweb.esu1.org/chiefweb/stories/storyreader\\$323](http://teacherweb.esu1.org/chiefweb/stories/storyreader$323) (November, 2012).

7. Ibid.

8. La Flesche, *The Middle Five, Indian Schoolboys of the Omaha Tribe*, viii-ix.

9. Mark Awakuni-Swetland, *The Omaha Language Curriculum Development Project*  
See <http://omahalanguage.unl.edu/> (February, 2011).

a technology assistant to develop technology-based activities that middle and high school students could utilize in language and culture classes. My research became a response to a community need.

## **Project Methods**

Prior to research and development of technology-based programs and activities for the ULMRD Project, a process by which the center's technological needs and resources could be assessed to facilitate appropriate computer-based program choices was constructed using Randy Bennet's source, "Planning and Evaluating Computer Education Programs." Each program that was chosen for implementation in the project was then evaluated using criteria provided in Bennet's work. Bennet's criterion focuses on the necessary process for selecting appropriate computer programs through "careful planning and systematic evaluation." He explains that planning and evaluating computer programs should include input from the group or individuals who will utilize the program. The program itself should "respond to their needs."<sup>10</sup> I prepared the following research and evaluation model using Bennet's framework, and charted the information through numerous discussions between Ms. Stabler, ULCC staff, and myself to outline the process of the ULMRD Project, track the projects' progression and measure the value of each program for possible use in the project.<sup>11</sup>

---

10. Randy Elliot Bennett, "Planning and Evaluating Computer Education Programs," *Educational Testing Service* (Columbus, OH: Merrill Publishing Company 1987), 2.

11. Carol Taylor Fitz-Gibbon, Elaine Lindheim, Lynn Lyons Morris, *How to Measure Performance and Use Tests* (Newbury Park, CA: SAGE Publications, Inc. 1987), 10.

Planning and Evaluation Process	Umóho <sup>®</sup> Iye Language and Cultural Center
Purpose	Integrate computer-based language learning programs and activities into middle and high school Umóho <sup>®</sup> Iye Language and Cultural Center classroom curricula, including digital storybook language lessons that will be burned to DVD formats to be made available to the greater UNPS and Omaha community upon request.
Assess ULCC needs and available resources	Assess needs of ULCC instructors in developing computer-assisted language learning programs and available resources to implement development.
Evaluate and Choose Program Software	Describe and review program with instructors. Choose appropriate programs.
Review Program and Choose Curriculum Material	Review curricular material with ULCC staff and choose material most suitable for the program to teach.
Input Curriculum Material	Using the curricular material provided by Umóho <sup>®</sup> Iye language instructors, input curricular material into program to develop a digital language lesson.
Test Programs on Classroom Computers	Test and evaluate program on ULCC classroom computers.
Train Teachers	Teach instructors how to use the program.
Test Programs in Classrooms	Instructors will test program in the classroom with students.

*Figure 1: Research and Evaluation Method Outline*

The research and development process for the ULMRD Project was constructed in the following ten phases to facilitate research, evaluation and development of computer-based activities. This was developed after the project was over, also using Bennet’s framework, to articulate how the process was carried out so that in the future ULCC and other communities who may reference this material may observe how this work is organized step-by-step.

Phase 1	Obtain input through conversation with ULCC staff to assess needs and available resources; identify staff's desired end-result for computer-assisted language learning programs, and determine what resources will be available during program developments.
Phase 2	Research computer-based programs suitable for developing language lessons.
Phase 3	Evaluate computer-based programs suitable for developing Umó <sup>h</sup> o <sup>n</sup> Íye language lessons.
Phase 4	Review programs with Umó <sup>h</sup> o <sup>n</sup> Íye language instructors to identify what curricular material would be most suitable for the program to teach, and obtain curricular material from instructor.
Phase 5	Input Umó <sup>h</sup> o <sup>n</sup> Íye curriculum material into computer program and develop a language lesson.
Phase 6	Test programs on the Center's classroom computers to determine if programs fulfill Umó <sup>h</sup> o <sup>n</sup> Íye language instructor's needs and are compatible with ULCC classroom computer capabilities.
Phase 7	Develop step-by-step instructions for teaching and utilizing the program on each type of computer.
Phase 8	Teach Umó <sup>h</sup> o <sup>n</sup> Íye language instructors how to use the programs.
Phase 9	Allow Umó <sup>h</sup> o <sup>n</sup> Íye language instructors to practice using the programs with students in ULCC middle and high school classes.
Phase 10	Gather feedback from ULCC staff.

*Figure 2: Research and Development Method Outline*

ULMRD Project work entailed development of full-length model activities that could be easily reproduced in future classes. Instructors worked with their classes for two weeks, teaching students how to utilize the lesson activities and providing me with verbal feedback as to teacher and student responses in working with the programs.

Summative evaluations were the primary method for evaluating each computer-based program, and considering its appropriateness for use in Umó<sup>h</sup>o<sup>n</sup> Íye language and culture classrooms. It was then determined whether the program would fulfill the objective of incorporating effective computer-based language lessons into the Umó<sup>h</sup>o<sup>n</sup> Íye Language and Culture class curricula. The project documented responses from ULCC staff to detail formative evaluations of the programs as well. Formative evaluations identified which programs worked best, the strengths and weaknesses of the programs, and the favorability of the programs in class.<sup>12</sup> Formative evaluation input was documented through observation

---

12. Fitz-Gibbon, Lindheim, Morris, *How to Measure Performance and Use Tests*, 1987.

during review of the programs with ULCC staff, and through conversations with staff after the programs had been introduced to students. The formative evaluative feedback disclosed that all eight activities developed over the course of the ULMRD Project were popular within ULCC classes and effective in engaging students in interactive activities, working directly with Umó'ho'íye language and culture-based material while completing technology-based projects.

## **Project Developments**

An abundance of curricular material was available for the ULMRD Project work, which eliminated the need to create and develop new material into digital lessons. A language lab that consisted of five laptop computers, three PC's and two Macs, was established to expose students to both PC and Mac computer programs and familiarize them with the differing software programs and hardware operations for both operating systems.

Much of the center's 2011 grant money was required to establish the language lab, and so the project focused exclusively on programs that were available as freeware. This meant that research and evaluation would be limited to programs that were free to download from the Internet and utilize from ULCC computers. Computer software was made available through UNPS, which included Windows Vista and Snow Leopard operating systems, Microsoft Word, PowerPoint, iMovie and MovieMaker programs. Smart Board hardware and software material was available through the center as well. The next step was researching and developing language and culture-based lesson activities.

Pilot lessons were developed, highlighting each activity's language and culture-based educational capabilities, which were then presented to instructors who would approve of further development. Lessons and lesson plans were developed for each activity to describe the process of utilizing the computer-assisted language learning lessons. The project endeavored to ensure that each lesson would be as comprehensive as

possible by any ULCC student or instructor to easily recreate in the future and facilitate continued use of the activities after the project concluded. With ongoing development of projects, given our available computer programs and activities, the project inevitably generated the development of two full-length digital language lesson storybooks.

## **Digital Storybooks**

Digital storybooks provide a useful classroom activity to introduce students to multiple computer programs, including working with images, audio and text. The ULMRD Project created digital storybooks based off of stories developed by ULCC students, using Umó<sup>h</sup>o<sup>n</sup> Íye phrases and images downloaded from the Internet. Each story was related to an animal of the student's interest. One story described lions, and the other horses in various settings. The stories were meant to elicit basic subjects, nouns and verbs that students could translate from English to Umó<sup>h</sup>o<sup>n</sup> Íye, creating complete phrases such as “the lion is hunting,” translated as “wanítawaxa abáe mo<sup>n</sup>thín”. In the process of turning this textual material into digital stories, an Elder and fluent speaker was recorded reading each narration from beginning to end. During recording, pauses and multiple video takes were allowable because the footage could be edited in iMovie and MovieMaker programs at a later time. The flexibility in this process was highly convenient and practical to capture the content in its entirety, and then rework the video on a computer, placing the most ideal content in the storybooks. The digital storybook lessons incorporate spoken and written Umó<sup>h</sup>o<sup>n</sup> Íye with visual content to tell the story through audio, text and images. Additionally, the lessons encompass an immersion-based language learning technique, using English and printed text as little as possible. This challenges the learner to focus only on Umó<sup>h</sup>o<sup>n</sup> Íye speech. Appropriate length of pause time between slides, or digital pages, was determined through multiple trials, to allow the reader time to repeat the Umó<sup>h</sup>o<sup>n</sup> Íye phrase at least twice before the next phrase was presented. This would help the learner better retain the information.

Development of digital storybooks acquaints students with multiple computer activities while also encouraging student-Elder interactions and relationships. The lessons initiate an opportunity for students to learn proper Umó<sup>h</sup>o<sup>n</sup> cultural behavior when interacting with an Elder. In recording speech to create their own movies, students will learn the appropriate way to elicit Umó<sup>h</sup>o<sup>n</sup> Íye phrases from an Elder, and respectful approaches in inviting an Elder to participate in the project.

Young people such as these ULCC students will undoubtedly continue to assert their role as principal leaders in implementing technology-based means to develop methods and materials that strengthen language and cultural knowledge in education. The projects developed during the ULMRD Project support this process within the Omaha community by introducing students to new and innovative technologies that will motivate them to engage in ongoing creation of language and culture-based material, becoming directly involved in contributing to their community's successful Nation Building practices.

The ULMRD Project's digital storybook developments and other technology-based activities are documented in a ULCC language lab manual; a guidebook containing lesson plans, lessons, textual, and visual instructional guides as to the processes for carrying out each step of developing digital storybooks, as well as utilizing other computer-assisted language learning and culturally relevant activities using certain computer and Smart Board programs and software (see References). The manual provides a valuable and informative reference for the center and other communities endeavoring to incorporate technology-based methods and materials into language and culture-based development, preservation and revitalization work.

## **Results, Feedback and Reflections**

At the project's conclusion, it was evident that our objective to create technology-based, Umó<sup>h</sup>o<sup>n</sup> Íye curricular materials that introduced

new technologies into the ULCC community and facilitate ongoing Umó<sup>h</sup>o<sup>n</sup> Íye language and cultural technology-based lesson activities had been successfully accomplished. One of the most rewarding findings in the ULMRD Project activities were student's responses that the lessons were fun and enjoyable to work with, but also that the activities lessened student's inhibitions towards speaking Umó<sup>h</sup>o<sup>n</sup> Íye in class. One instructor noted that while certain ULCC students often exhibited shyness and reluctance to speak Umó<sup>h</sup>o<sup>n</sup> Íye in class, they found humor and a sense of relaxation in the use of the computer-assisted language learning activities. The programs abated students' hesitancy towards language use as they engaged in new and intriguing activities. While the projects offer an attainable method for the center to generate student involvement and participation during computer-based language and culture lessons, a major challenge to ULCC's language lab efficiency revealed during the project is the lack of a technology assistance resource. The center would benefit from a continuing technology assistant to resolve technological troubleshooting issues, as well as contribute directly to the continued development and utilization of technology-based materials and ULCC hardware. Funding must be allocated for a technology assistant in the future and a desirable candidate must be available to fulfill the task. Until such a time and opportunity, the newly developed language lab manual will provide educational materials to encourage computer-based language and cultural learning projects.

The ULMRD Project promotes technology-based language and culture preservation and materials development, while demonstrating that technology does not necessarily require that a community be dependent on specific resources to implement technological methods and produce computer-generated material. Free programs are available with the capacity to develop original, innovative, interactive, engaging language and culture-based lessons, eliminating a dependence on funding. The ULMRD Project reflects these ideals in utilizing available resources to empower educational capabilities in the interest of ULCC students, the future generations of Omaha society.

This work reveals that computer-based learning activities can inspire and encourage students to work with their language through technology-based methodologies, while enhancing teaching capacities for instructors. The project's activities serve as the first materials that will facilitate curricular teaching and learning activities for the newly established ULCC language lab. This will benefit ULCC instructors, students, UNPS and the greater Omaha community with new ways to practice the Umóho language and continue developing computer-assisted language and culture-based learning material. The project work intends to support all Indigenous communities endeavoring to enhance positive youth developments and strengthen tribal sovereignty through contemporary, technological means. The ULMRD Project ideally strives to provide methods for developing effective language and cultural preservation, revitalization and educational material to support these valuable pursuits for the Omaha, and other communities.

## **Reference List**

Awakuni-Swetland, Mark. The Omaha Language Curriculum Development Project. 2006. <<http://omahalanguage.unl.edu/>> (23 Feb. 2011).

Bennett, Randy Elliot. 1987. "Planning and Evaluating Computer Education Programs." Educational Testing Service. Columbus, OH: Merrill Publishing Company.

Cajete, Gregory. 1994. Look to the Mountain: An Ecology of Indigenous Education. Durango, CO: Kivaki Press.

Cornell, Stephen & Kalt, Joseph P. 2003. "Reloading the Dice:

Improving the Chances for Economic Development on American Indian Reservations.” Joint Occasional Papers on Native Affairs 2003:2. Native Nations Institute Udall Center for Public Policy. Tucson: University of Arizona.

Deloria, Vine & Wildcat, Daniel. 2001. Power and Place: Indian Education in America. Fulcrum Publishing.

Fitz-Gibbon, Carol Taylor; Lindheim, Elaine & Morris, Lynn Lyons. 1987. How to Measure Performance and Use Tests. Newbury Park, CA: SAGE Publications, Inc.

Hermes, Mary. 2000. “The Scientific Method, Nintendo, and Eagle Feathers: Rethinking the Meaning of ‘culture-based’ Curriculum at an Ojibwe Tribal School.” International Journal of Qualitative Studies in Education 13:4, 387-400.

La Flesche, Francis. 1963. The Middle Five, Indian Schoolboys of the Omaha Tribe. University of Wisconsin.

McNally, Michael David. 2004. “Indigenous Pedagogy in the Classroom: A Service Learning Model for Discussion.” The American Indian Quarterly 28:3, 604-617.

Omaha Nation Public Schools. 2012. “About the Omaha People.” <[http://teacherweb.esu1.org/chiefsweb/stories/storyreader\\$323](http://teacherweb.esu1.org/chiefsweb/stories/storyreader$323)> (05 Nov. 2012).

ULCC Language Lab Manual Resource Reference

Instructional guide to ULMRD Project activities, See: ([http://dl.dropbox.com/u/22440280/Haley\\_Tuttle\\_UmoNhoN\\_Iye\\_Language\\_Media\\_Research\\_Development\\_Proj\\_Appendix.doc](http://dl.dropbox.com/u/22440280/Haley_Tuttle_UmoNhoN_Iye_Language_Media_Research_Development_Proj_Appendix.doc)).