

INTEGRATING TECHNOLOGY INTO MINORITY LANGUAGE PRESERVATION AND TEACHING EFFORTS: AN INSIDE JOB

Daniel J. Villa
New Mexico State University

ABSTRACT

The recent explosion in technology, in particular in computer and digitizing systems, has many implications for heritage language maintenance and learning. In particular, authentic language usage can be easily recorded and preserved for those goals. That same explosion, however, can lead to a less than appropriate implementation of technology for language maintenance and learning. Further, certain cultural boundaries can make it difficult to have access to authentic language usage, particularly by out-group individuals who work on indigenous languages. This paper presents a pilot study that attempts to both implement technology in an appropriate manner and surmount the problems faced by out-group language researchers by training an in-group member, in this case a speaker of Navajo, in the methodology and technology necessary for recording and preserving her heritage language. The results of this work are discussed, as well as the role of computer and digitizing technology in language maintenance and teaching.¹

INTRODUCTION

The loss of non-English languages in the United States, either indigenous or of other origin, appears to be an inexorable process. Regarding indigenous languages, Krauss (1998) notes that of the estimated 300 present before European contact in what is now the United States and Canada, some 210 survive. Many of those languages, however, are only spoken by the oldest members of the speech community, and will die along with them. At the same time, Krauss sounds a very faint note of hope. Members of minority language groups have been, or are becoming, increasingly aware that an important linguistic and cultural tradition is disappearing, and some have chosen to take measures to try to stem the incipient loss of their heritage language. These efforts take place at many levels, but undoubtedly the recent explosion in technology presents opportunities to aid in efforts at learning or re-acquiring a heritage language.

At the same time, the sheer rapidity of that boom can place that same technology out of the reach of all but a select number of highly trained individuals. The purpose of this paper is to illustrate one way in which the technology gap may be bridged so that members of a minority language group can take advantage of technology for language teaching, preservation and maintenance in a manner appropriate to their cultural and linguistic realities. Described here is a pilot project carried out at New Mexico State University (NMSU), under the auspices of the Kellogg Foundation, to train a speaker of an indigenous language, Navajo, in both language maintenance issues and the technology needed for creating authentic materials for language maintenance as well as instruction.

TECHNOLOGY AND LANGUAGE PRESERVATION

Not long ago, a people's record of their traditions, culture, and their very way of viewing the world died with the oldest member of the community unless that record was memorized by subsequent generations. Even the introduction of a written record did not solve this situation. Writing down a story does not capture how talented storytellers pass on cultural history, or the language skills they use to do so. However, the invention of new technologies changed that limitation. It became possible, with the appearance of Edison's phonograph toward the end of the 19th century, to capture sound, and at that point it became at least theoretically possible to record ancestral stories and languages. Even after an older

generation disappeared, their voices could still be heard, as many times as one wanted, so that their lives and their memories did not disappear at their death.

However, the new technologies were not, nor are they presently, foolproof and permanent. For example, some of the earliest language researchers used magnetic recording machines that do not exist anymore, except perhaps in museums. In addition, the recording medium has become obsolete, as some of the earliest recordings were made on magnetized steel wire. Even in the event that a machine capable of playing the original recordings can be found, some of the magnetic coatings are so fragile that trying to use them may result in the recording's destruction.

Technological advances now permit those who wish to preserve ancestral voices to do so in a way that is relatively easy and inexpensive. At one time, recording a voice in a permanent manner was difficult and expensive, but that has changed. Computer design has advanced so quickly that it is now possible to acquire a system for preserving languages relatively cheaply. But the use and implementation of recording and digital storage technologies require individuals who are capable of dealing with the necessary hardware, software, and key components of these electronic innovations, and who are sensitive to the language needs they confront. I return to this point below.

TECHNOLOGY AND MINORITY LANGUAGE TEACHING

A major problem in the teaching of heritage languages, at least in the United States, is identifying and obtaining authentic materials for instructional purposes. Here, the phrase "authentic materials" is defined as original texts, films, and recordings of language usage, among other media, that accurately reflect how a language community employs its heritage tongue, materials that have not been specifically created for instructional purposes. Thus, a dialogue in a language textbook contrived solely to illustrate a certain usage of a verb or exemplify some grammatical structure is an example of non-authentic materials. A recorded oral history carried out by a member of a minority language group with another member of that language group, used to illustrate language use, falls into the "authentic materials" category.

Even minority languages commonly taught in the US that have relatively large numbers of speakers face a dearth of authentic materials. For example, materials employed to teach Spanish to U.S. Spanish speakers, the largest linguistic minority in this country, often reflect a willful denigration of native U.S. varieties of the language (see Villa, in press), mirroring instead the writing and speech of Spaniards, Mexican nationals, Colombians, Venezuelans, and so forth, but rarely the language of U.S. Spanish speakers as they hear it at home and in their communities (García, 1993; Rodríguez Pino & Villa, 1994; Villa, 1996, 1997). This situation is exacerbated in the case of other minority languages in the US which have far fewer numbers of speakers and a shorter history of a written form of the heritage tongue. This is particularly the situation in which indigenous languages in the US are found. As Adley-SantaMaria (1997) notes, "Another obstacle to learning indigenous languages is a lack of pedagogical materials and one of the reasons for that lack is because some native people oppose having their languages written down or recorded" (p. 36).

This citation points to another problem that is particularly acute for indigenous languages. Those who might wish to create materials for teaching may not have access to situations in which the heritage language is authentically employed. This is partly owing to what will be termed here as "cultural mining." Certain researchers have entered indigenous groups for study, taken the data they sought, and then left to publish their research without returning any information to the people with whom they worked. Adley-SantaMaria (1997) describes this situation from an in-group member's point of view:

Linguists, anthropologists, and other scientists extol methods of scientific inquiry utilizing the Euro-Western philosophical underpinnings of the various disciplines in American academics. Linguistics seemed like anthropology, a field of study that did not have a good reputation among some of us Native Americans because of its connection with scientific inquiry that has exploited

indigenous societies and kept us rooted in the past. It seemed as if we native people were like "bugs" on a microscopic slide for anthropologists (scientists) to examine and "dissect" into our varied parts: kinship patterns, material subsistence, cultural artifacts, marriage obligations, types of shelter, ceremonial life, and so forth, all of the past, as if we are invisible in contemporary society. Some of us have long abhorred the tunnel vision of these disciplines that generally do not consider non-Western societal world views as legitimate. (pp. 136-137)

In this context, the term "in-group" refers to a set of individuals who share common ethnic, social, geographic, historic, and linguistic ties, among others. The White Mountain Apache would be an example of an in-group, and the scientists Adley-SantaMaria refers to members of the out-group. It is entirely possible, of course, that heterogeneity exists within the "in-group"; not all members may speak the mother tongue, they may have been raised in different geographic areas due to migration patterns, or there may be divisions based along gender or age vectors. Be that as it may, for the purposes of this article the in-group consists of those individuals who have a voice in determining such matters as who has access to its language, culture, and other dimensions of that group's physical and spiritual realities.

As one result of that cultural mining, many indigenous groups in the US closely control who is allowed to enter the community to carry out work on language, among other areas of study. Further, certain functions, such as religious ceremonies, may be closed to out-group individuals. Such situations motivate the title of this paper; one solution to this problem is to train members of the language group in the use of advanced technology in order that materials for language preservation and teaching can be collected, archived, and prepared by in-group members for other in-group members.

METHODOLOGY

The work described here was carried out under the auspices of the Kellogg Foundation, which supported this project via the NMSU Bridges Program for American Indians in the Social Sciences and Humanities during the summers of 1999 and 2000. As noted at the [Bridges Program Web site](#), "The program's purpose is to strengthen educational functions at the tribal schools through faculty development and to facilitate student transfer to and retention at our mainstream institution." Students from the Southwestern Indian Polytechnic Institute (SIPI), the Crownpoint Institute of Technology (CIT), the Institute of American Indian Arts (IAIA), and Diné College were invited to the NMSU campus for a series of presentations in which faculty members shared their ongoing research projects. The students then chose the research project in which they wished to participate, and were invited to campus during the summer to collaborate with NMSU faculty members.

During the early stages of the Bridges Program, the author presented work he was carrying out regarding language loss, and a student from the Crownpoint Institute of Technology, Millie Smallcanyon,² decided to participate in that research. Her choice was fortuitous in that Smallcanyon had already received training in computer assembly and maintenance at CIT. She arrived at NMSU in the summer of 1999 with a sophisticated knowledge of personal computer technology, which was to accelerate the progress of the research collaboration. The first stage of the pilot project was dedicated to developing an awareness of the concept of language loss. Smallcanyon and the author (hereafter, the research team) spent the early weeks of the summer of 1999 researching their experiences as speakers of heritage languages that they had lost and re-learned, Navajo and Spanish, respectively.

The research team used an investigative and pedagogical technique employed by Shor and Freire (1987) and Freire and Faundez (1992), among others. That is, they established a topic for discussion, language loss, and revival, and then carried out a series of dialogues on that theme during a number of meetings. From these conversations they extracted and wrote down their personal experiences of language loss and maintenance, comparing and contrasting their individual histories. They used these data as a means of trying to identify what it was that brought them back to their native tongues, and to explore their

experiences to see if there were any common cross-cultural experiences that led them to reacquire their heritage languages. They found that despite sharp differences between their cultural backgrounds, they shared certain events in the process of language loss and language re-acquisition. They related those experiences to the literature in the field, such as Fishman's (1991) work on reversing language shift and McCarty and Zepeda's (1999) discussion of language and identity (Villa & Smallcanyon, 1999a, 1999b).

At the same time, the research team worked on building skills in collecting oral data. They employed an on-line handbook for the collection of oral histories (Hunner, Villa, Staski, & Wall, 1998) for such details as the following: how to select an appropriate site for an interview; how to prepare for the interview itself; and how to prepare the recording equipment, in this case a small, hand held tape recorder. After this initial work, Smallcanyon carried out a number of on-campus interviews with other participants in the Bridges Program, in both Navajo and English, in order to put into practice the data collection procedures she had worked on. After she felt comfortable carrying these out, and the recordings had been reviewed for clarity and content, she returned to her hometown of Kayenta, Arizona. There she carried out a number of interviews in Navajo with family members and acquaintances. Upon returning to the NMSU campus, the research team digitized these recordings, used a software package to "clean up" the resulting files (remove noise created by the recording system) and then copied them to a compact disk (CD). At that point, the end of the first summer's collaboration, an easily accessible, highly transportable sample of authentic Navajo dialogue had been created.

Space does not permit a detailed analysis of the materials that the research team created. However, with regard to the definition of authentic materials, the author will point out that in one particular session Smallcanyon's grandmother described their clan structure. This particular segment of the CD, then, contains not only the Navajo language modeled by two native speakers, but also important cultural information as well. Navajo is used in this instance as not just an exercise in demonstrating certain syntactic or lexical features, but rather as a means of passing on at least part of a worldview that its speakers embody. This language sample stands in contrast to non-authentic materials in which invented characters participate in a dialogue created solely for the purpose of teaching one grammar point or the other. The initial purpose of carrying out the recordings was not to create materials for teaching Navajo, but in the event that they were drawn upon for that purpose, they would provide a model for language usage as well as offering cultural content.

The result of the first summer's work was a series of CDs which represent a number of intergenerational conversations in Navajo. The second session, carried out in the summer of 2000, focused on creating a system similar to the one used in the first year's work, that is, on the technical end of creating authentic language materials. Before presenting this section, however, the author must begin with the disclaimer that, in discussing the various components utilized to create a system capable of producing language CDs, he endorses neither a particular product brand nor operating system. Components at hand were used, but similar systems certainly can be built using other makes and models of technology as well.

As noted above, digital technology has plummeted in price over the last two decades. To be sure, certain equipment is still expensive, but the technology explosion has resulted in powerful computational technology that can be had for little or nothing. The result of this reduction in the cost of highly useful equipment is that individuals or organizations interested in preserving language and creating education materials can have functional systems at very little cost. In the case here, NMSU has a facility which receives equipment that has failed or been replaced. The research team scoured this facility for random access memory (RAM), hard drives, machine cases, and power supplies, among other components.

In order to begin the process, Smallcanyon disassembled and cleaned a computer with a 233 megahertz Pentium processor. She then installed additional RAM, for a total of 64 megabytes, a card for an audio-to-digital processor, a CD-ROM (compact disk, read-only memory) drive, and a CD-ROM recording device. Concurrently, she audited a class on DOS (disk operating system) software. The machine was

reassembled, and an operating system installed. The software necessary to run the various devices mentioned above, included with the hardware, was also installed. The system was then turned on and tested. At that point the researchers had the technology to take an analog audio signal, digitize it, edit it, and then store it to an easily played medium. As they had salvaged the majority of components, the only ones that had to be bought were the CD-ROM recording device and the audio-to-digital signal converter, for a total of about US\$450.

The research team had the advantage, of course, of access to essentially free equipment. However, at the time of writing of this article, it is possible to get a very powerful computer, for example a machine with a Pentium III 667 MHz processor, for about US\$350. Add to that a decent monitor and the components listed above, and US\$1,000 or less will purchase a system that will digitally preserve an elder's voice. It may be that a single individual may not have the economic resources for acquiring this type of technology, or even know how to use it. However, once several people join together who are interested in preserving their culture and passing language on to subsequent generations, costs are reduced proportionately, and those who can deal with technological issues to assist in the creation of authentic materials can be identified.

What this means is that those who wish to preserve their heritage language, who would like to develop materials for teaching that language, do not necessarily have to be dependent on some governmental or academic institution to keep their language and history alive. Technological developments have moved along so fast that it is now possible for minority language speakers to record their language and history, and create materials for its teaching *as they deem appropriate*. In addition, this kind of preservation can remain usable for extended periods. Magnetic recordings, such as those on audiotape, will start to deteriorate after a certain length of time. Digital files have the potential to survive much longer, if handled properly.

The process may sound simple, and basically it is. However, the description above represents a broad sketch that leaves out various details of the process. For example, most, if not all, of the software needed to run older components such as hard drives or CD-ROM drives can be found on the Internet and downloaded. This does take some time and practice, though, as well as a fairly fast Internet connection. These are not always available at all sites, so partnering with those who can facilitate finding such information and software becomes crucial. Further, Smallcanyon entered the project with a sophisticated knowledge of computer technology, as noted above. Not all minority language groups may have institutional support such as the Crownpoint Institute of Technology to train in-group members in electronic technology, necessitating other means of providing such expertise to minority language speakers. Once again, collaboration is essential in addressing these issues.

Bearing these difficulties in mind, what this pilot project demonstrates is that a speaker of a minority heritage language acquired the skills needed to collect language data and to preserve it in a period of about 12 weeks. This results in an individual who has an in-group member's access to the contexts in which the minority language is used in authentic contexts, and who has the necessary technical skills to, minimally, assist someone who wished to create audio (or indeed video) materials for teaching that language. There exist precedents that underscore the importance of an in-group member working with out-group members in order to create (and disseminate) such materials. Angayuqaq Oscar Kawagley, for example, has a Web site (<http://www.ankn.uaf.edu/oscar.html>) which offers on-line electronic materials for indigenous peoples, through the [Alaska Native Knowledge Network](#). That Web site results in part from the collaboration between the author of the site and those who provide technical support at the University of Alaska Fairbanks. Finally, the project described above directly addresses the concerns of Adley-SantaMaria (1997), who writes, "On the one hand, I do not want our languages exploited and also believe that study of our languages should be done only for our people who want to learn their language and not for the wider audience. On the other hand, writing and video- and audio-recordings of our languages should be done for our tribal archives to be preserved for future generations of Apaches" (p.

137). As asserted earlier, partnering to facilitate the use of electronic technology results in in-group members resolving such conflicts as they see fit. If a minority language group decides that recordings will indeed be made of its language, and that only that group should have access to those materials, the technology currently exists for it to do so.

There does exist the possibility that certain in-group members could create materials that other in-group members do not approve of, owing in part to the ease with which those materials can now be assembled. As noted above, any particular in-group is not necessarily homogenous, and the heterogeneity of that group could result in differences of opinion as to what is appropriate or not to record and digitize, and what materials might be adequate for language teaching. However, the author returns to a central tenet of this article, that even in the event of such a lack of accord, it is ultimately the in-group that would resolve such a dispute, in ways that are appropriate to that group. This would not be a possibility in a scenario in which the in-group did not have control of the collecting, storing, and pedagogical use of their mother tongue.

The Role of the Computer in Teaching a Heritage Language

The appearance and rapid growth of computer technology opens new doors to heritage language maintenance and teaching, and at the same time presents challenges in its implementation for those tasks. In the relatively distant past (regarding the lightning fast advances in computer development), Nidia González-Edfelt (1993) wrote that technology had passed the pedagogical bases needed to effectively implement it in the language learning process. At that time, she stated, "The full impact of the micro-computer in education, however, has not yet been realized, as its influence continues to increase daily" (p. 172). Her assertion held to be true; for example, a technology not commonly available a scant 7 or 8 years ago, the CD-ROM drive, is now standard equipment on most systems. That technology provided new opportunities for language teaching, but also created new pedagogical demands for its effective implementation.

One example of these challenges is the so-called "interactive" programs for language teaching on CD-ROM. The majority of these require that a language learner sit in front of a computer and click on various icons to listen to language samples, learn vocabulary, perhaps produce the language, and take tests, among other activities. This may be interpreted as an extension of the audio-lingual method that followed the development of the reel-to-reel tape recorder in the late 1950s. The language learner is using a new technology as a tool for providing comprehensible input. There may be some benefits that derive from such pedagogical activities, but there simply is not an authentic communicative environment present in such situations.

Krauss (1998, p. 18), for example, expresses certain reservations towards computers with regard to their usefulness for language maintenance and teaching. He writes,

...even in the US Southwest, where so many indigenous languages are still spoken by children, specialists in these languages often become preoccupied with more and better technologies such as the computer and multimedia for teaching language in the school. I am sure this is good, and this teaching is serious and earnest. At the same time, though they may note that the children are no longer "producing" the language, they are distracted from the real reason for this: the language is no longer consistently spoken to children in the home as a mother tongue.

The author believes Krauss' concerns are justified. Computers cannot become a surrogate for one generation of minority language speakers passing that tongue to subsequent generations. The teaching of a language, its intergenerational communication, depends on individuals dedicated to both transmitting and learning the heritage tongue. Hinton (1998) and Sims (1998) detail one attempt to preserve an indigenous language, in which a speaker of that language tutors a learner in intensive one-on-one sessions.

To repeat a previous assertion, I believe that computers can *support* language maintenance and teaching efforts, not replace them. For example, the existence of authentic materials can fit well into an appropriate pedagogy for teaching a heritage language. Benally, in his 1994 article "Navajo Philosophy of Learning and Pedagogy," consistently emphasizes the importance of elders passing on knowledge to younger generations. He writes, "Our ancient tribal stories identify the creators of this world...." (p. 24), "...our elders have explained that we have a male-like, protective and aggressive side...." (p. 24), "The elders have added another dimension that grounds traditional knowledge" (p. 26), to note only a few examples. This tradition of intergenerational teaching forms a central core of an in-group pedagogical practice. Preserving the voices of the teachers in a culturally acceptable manner can provide valuable materials for that particular pedagogy.

Regarding the interaction between language and technology, Smallcanyon provides an anecdotal example of her experiences with re-acquiring her heritage tongue that underscores such a relationship. She writes,

When I think back on those days back in boarding school, there were a lot of students that would speak Navajo; they weren't ashamed to speak it, either. I knew if I spoke Navajo I would be made fun of because I was "different." So it wasn't until I was in high school and joined the Miss Sevier Indian Princess pageant that we had to say a formal introduction in Navajo and then in English. My friends taught me how to say what, then I buckled down and from there I would just ask my grandmother "How do I say this? What does this mean?", just all kinds of questions and learning the language all over again. But it wasn't as difficult to relearn the language. Today I speak fluently in Navajo and I'm proud that I do because I can sit and talk with my grandmother or my elders and family members, just to be able to hold a conversation with them feels great. (Villa & Smallcanyon, 1999b)

Her reacquisition of Navajo took place among family and friends, her teachers, not in front of a computer or a CD player. However, she now possesses permanent records of some of the voices that taught her; these archives may allow future generations of Smallcanyon's family to listen to histories as recounted by their forebears, to hear the world-view of an older generation as expressed in Navajo.

In sum, computer technology has the possibility of filling a very important niche in minority language maintenance and teaching. Its accessibility increases as time passes. Between the time of the original composition of this article and its current revision, prices for computer technologies have continued to tumble, so that ever more powerful systems become available for ever decreasing sums. Partnering between in- and out-group members can lead to the appropriate collection, processing, and distribution of language materials for their use in maintenance and teaching efforts. The means of resolving the dilemma for language recording and the preparation of pedagogical materials created by cultural mining are now more easily resolved, to whatever degree may be possible, through inexpensive access to computer technology. There can be no doubt that such rapid advances may create new problems. As noted above, not all in-group members may be in agreement as to what is appropriate or not regarding the recording of their mother tongue, and the fact that certain individuals could feasibly proceed with such work before an accord was reached presents a distinct possibility. This is but one of the challenges presented by new technologies. However, as the author observed earlier, the means of resolving such conflicts rest with in-group members, and increasingly solutions to such problems are not dictated by access, or the lack of it, to technological resources. Rather, they may be dealt with in ways that are internally appropriate to the group in question.

CONCLUSION

This paper outlines a pilot project in which a native speaker was trained in both the methodology and the technology to elicit, record, and preserve her heritage language as it is used in authentic contexts. In doing so, she continues a tradition of the intergenerational use of Navajo in her family. The author hopes to have

shown that such an activity can result in materials that are useful for language preservation as well as for teaching. The fact that an in-group speaker of a minority language carried out this work demonstrates that it is not necessary to rely on out-group members to provide such materials. Further, the technology needed for this process is not tremendously expensive, and will become increasingly inexpensive as prices for computers continue to fall.

There are, of course, shortcomings in this work that hamper its replication in other minority language communities. As noted above, not all minority language groups have an institution such as the Crownpoint Institute of Technology to provide training in electronic technologies to their members. Some indigenous languages may have no younger speakers such as Smallcanyon to carry out the work described here. If indeed there are younger speakers, they may not be interested in learning how to manipulate technology. Not all speakers of the language may be interested in language maintenance and teaching issues.

Further, there are limitations to the technology described here. The storage devices used in this project are not permanent; CDs will begin to deteriorate after a number of years, and do not constitute a truly long-term storage medium. Hard drives, another means of storing the digitized recordings, are prone to failure that destroys the data they contain. If the technology explosion creates powerful systems that are relatively inexpensive, it also renders some older machines obsolete, as was the case with the steel wire recorders. The current flux in digital technology makes it difficult to predict what systems will be in place in a short span of time, and makes re-training a constant necessity. Again, while technology has much to offer, it is no panacea.

What the author does hope to have shown is how individuals of U.S. minority languages have been able to collaborate in a project aimed at keeping their linguistic heritage alive. Language maintenance and its teaching are sides of a single coin; the two are not mutually exclusive. Teaching the language to subsequent generations implies its maintenance, and vice versa. The cross-linguistic and cross-cultural interactions the author presents here may be useful for a concerted effort at minority language maintenance and teaching. Regarding the situation of indigenous languages, Krauss (1998, p. 19) observes,

...I have found their [indigenous language speakers] determination is very firm, and rather that they are in need of realizing that they have much more company than they thought -- that many groups around the country and the world share their problems and could share solutions -- and that there is much to be gained by organization and cooperation.

The work that the author and Millie Smallcanyon have carried out suggests that such collaboration is both possible and fruitful. The author notes this as Adley-SantaMaria (1997) writes, with regard to the status of non-English languages in the US,

Speakers of Chinese, Spanish, or other so-called "world languages" have non-speakers who can always find a speech community even into the future that will be available to them if they want to learn their languages, but indigenous languages are unique speech communities. Once our native speakers are gone and the younger generations become completely monolingual in English, the loss of our languages is permanent. (p. 136)

The accuracy of this observation is undeniable. At the same time, speakers of non-indigenous, non-English languages face many of the same challenges in maintaining their heritage tongues in a predominantly English speaking environment. Native varieties of U.S. Spanish, for example, are as prone to loss here as any other minority language (see, e.g., López, 1978; Veltman, 1988; Bills, 1989; Solé, 1990; Pease-Álvarez, 1993; Bills, Hernández Chávez, & Hudson, 1995; and Rivera-Mills, 2001, to name only a few). That loss concerns many individuals of Spanish speaking origin, who see an important aspect of their community life slipping away. Sharing resources, pedagogical techniques and technological

expertise cross-culturally and cross-linguistically can only benefit all those dedicated to preserving their unique cultural heritage as embodied in their mother tongue.

NOTES

1. The author is grateful to the three anonymous reviewers of Language Learning and Technology, whose extensive comments have led to substantial improvements in this article.
2. As work that Millie Smallcanyon and the author have presented at conferences is cited in this text, her name has not been changed. The author requested and received Smallcanyon's permission to use her real name in this article.

ABOUT THE AUTHOR

Daniel J. Villa is an Assistant Professor of Spanish at New Mexico State University. He researches inter- and intra-cultural issues in language shift and language maintenance, demographic trends in minority languages in the US, the use of electronic technology in language teaching, and language policy and language planning regarding U.S. Spanish.

Email: dvilla@nmsu.edu

REFERENCES

- Adley-SantaMaria, B. (1997). White Mountain Apache language: Issues in language shift, textbook development, and native speaker-university collaboration [Electronic version]. In J. Reyhner (Ed.), *Teaching indigenous languages indigenous languages* (pp. 129-143). Flagstaff, AZ: Northern Arizona University. Available at http://jan.ucc.nau.edu/~jar/TIL_12.html
- Benally, H. J. (1994). Navajo philosophy of learning and pedagogy. *Journal of Navajo Education*, 12, 23-31.
- Bills, G. (1989). The US Census of 1980 and Spanish in the Southwest. *International Journal of the Sociology of Language*, 79, 11-28.
- Bills, G., Hernández Chávez, E., & Hudson, A. (1995). The geography of language shift: Distance from the Mexican border and Spanish language claiming in the Southwestern U.S. *International Journal of the Sociology of Language*, 114, 9-27.
- Fishman, J. (1991). *Reversing language shift: Theoretical and empirical foundations of assistance to threatened languages*. Clevedon, UK: Multilingual Matters.
- Freire, P., & Faundez, A. (1992). *Learning to question: A pedagogy of liberation*. New York: The Continuum Publishing Company.
- García, O. (1993). From Goya portraits to Goya beans: Elite traditions and popular streams in U.S. Spanish language policy. *Southwest Journal of Linguistics*, 12, 69-86.
- González-Edfelt, N. (1993). An introduction to computer-assisted Spanish language learning. In B. J. Merino, H. T. Trueba, & F. Samaniego (Eds.), *Language and culture in learning: Teaching Spanish to native speakers of Spanish* (pp. 171-199). London: The Falmer Press.
- Hinton, L. (1998). Language loss and revitalization in California: Overview. *International Journal of the Sociology of Language*, 132, 83-94.
- Hunner, J., Villa, D., Staski, P., & Wall, J. (1998). Preserving community/cuentos del varrio: An oral history instruction manual. Retrieved June 3, 1999, from <http://web.nmsu.edu/~publhist/ohindex.html>.

- Krauss, M. (1998). The condition of Native North American languages: The need for realistic assessment and action. *International Journal of the Sociology of Language*, 132, 9-21.
- López, D. E. (1978). Chicano language loyalty in an urban setting. *Sociology and Social Research*, 62, 267-278.
- McCarty, T. L., & Zepeda, O. (1999). Amerindians. In J. Fishman (Ed.), *Handbook of language and ethnic identity* (pp. 197-210). Oxford, UK: Oxford University Press.
- Pease-Álvarez, L. (1993). *Moving in and out of bilingualism: Investigating native language maintenance and shift in Mexican-descent children*. National Center for Research on Cultural Diversity and Second Language Learning, Research Report, 6. Washington, DC: Center for Applied Linguistics.
- Rivera-Mills, S. (2001). Acculturation and communicative need: Language shift in an ethnically diverse Hispanic community. *Southwest Journal of Linguistics*, 20, 211-223.
- Rodríguez Pino, C., & Villa, D. (1994). A student-centered Spanish-for-Native-Speakers program: Theory, curriculum design and outcome assessment. In C. Klee (Ed.), *AAUSC issues in language program direction* (pp. 351-369). Boston: Heinle & Heinle.
- Shor, I., & Freire, P. (1987). *A pedagogy for liberation: Dialogues on transforming education*. South Hadley, MA: Bergin and Garvey.
- Sims, C. P. (1998). Community-based efforts to preserve native languages: A descriptive study of the Karuk Tribe of northern California. *International Journal of the Sociology of Language*, 132, 95-113.
- Solé, Y. R. (1990). Bilingualism: stable or transitional? The case of Spanish in the United States. *International Journal of the Sociology of Language*, 84, 35-80.
- Veltman, C. (1988). *The future of the Spanish language in the United States*. New York: Hispanic Policy Development Project.
- Villa, D. (1996). Choosing a "standard" variety of Spanish for the instruction of native Spanish speakers in the U.S. *Foreign Language Annals*, 29, 191-200.
- Villa, D. (1997). Theory, design and content for a "grammar" class for native speakers of Spanish. In M. C. Colombi & F. Alarcón (Eds.), *La enseñanza del español a hispanohablantes: Praxis y teoría* (pp. 93-101). Lexington, MA: D.C. Heath.
- Villa, D., & Smallcanyon, M. (1999a, October). *Rainbow children: A case study of successfully reversing language shift*. Paper presented at the meeting of the Linguistic Association of the Southwest XXVIII, San Antonio, TX.
- Villa, D., & Smallcanyon, M. (1999b, October). *Rainbow children: How we teach each other about maintaining our heritage languages*. Poster session presented at the meeting of the First National Conference on Heritage Languages in America, Long Beach, CA.
- Villa, D. (in press). The Sanitizing of U.S. Spanish in Academia. *Foreign Language Annals*.