

Braille Codes for Native American and First Nations Languages

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Abstract

There has been a recent resurgence of Native American and First Nations language use as a part of a broader effort toward community wellness and cultural revival. In order for blind people in these communities to fully participate in language-oriented programming, the establishment of a braille code for the language in question is necessary. Creating a braille code for a Native American or First Nations language requires collaboration between literate native speakers and braille experts. As blind Native American and First Nations people learn braille codes for their languages, they can experience empowerment and increase their well-being. Teachers of the blind can offer instruction in these braille codes, building relationships marked by understanding while simultaneously empowering their students to participate in language-oriented, community-based programs and activities.

Keywords

Braille, Native American, First Nations, blindness, education, rehabilitation

Introduction

If a blind person wants to learn a language, that blind person must learn the braille code for that language in order to experience it most fully (Orsini-Jones, Courtney, & Dickinson, 2008). Not all languages have established braille codes. Some of the languages which do not have established braille codes are Indigenous languages, including those indigenous to North America. If a blind person wants to learn one of these languages and cannot access a braille code, that blind person is at a disadvantage. Since blindness affects a cross-section of society (Omvg, 2002), some Native Americans and First Nations people are also blind. In order to empower blind people to participate fully in language learning, it is vital that Indigenous North American languages have braille codes. There is a major movement toward teaching these languages to the youngest generations (Aguilera & LeCompte, 2007; Gresczyk, 2011), and

braille is the default reading medium for blind and visually impaired children in the United States (Bell, Ewell, & Mino, 2013; Individuals with Disabilities Education Act, 2004). Many Indigenous people believe that the maintenance of Indigenous languages is central to the expression of their Indigenous cultures (Cassidy, 1992). Cushman (2011) writes that any and every act of reading, writing, or speaking a tribal language contributes to a tribe's continued existence. In her abstract, Sable (1996) explained that Native American and First Nations languages and cultural traditions are “relevant, culturally unique, and potentially helpful to contemporary scientific and technological concerns.” Vinyeta and Lynn (2013) discuss ways that Traditional Ecological Knowledge (TEK), which is knowledge held by Indigenous peoples, can inform and enhance climate change mitigation and adaptation efforts beyond western science alone. Norton-Smith et. al (2016) discuss the impacts of climate change on Indigenous sovereignty, culture, health, livelihoods, and economies. The impacts are cyclical, where language and culture support TEK, which supports climate change mitigation and adaptation efforts, which support language and culture. MacCuspie and Holbrook (2007) found that 4.5 percent of Canadian school-aged children who read braille were members of First Nations families. These facts give rise to the need for an investigation of the process and impacts of creating Braille codes for these languages.

Status of Native American Languages

Caldwell et. al. (2005) gave some history of Native American languages. Beginning in the 1870s, children in many tribal communities were taken forcibly from their homes and sent to compulsory, segregated boarding schools exclusively for Native American youth. Instead of being educated, they ordinarily were emotionally, physically, and sexually abused by school officials. This was the story of many decades of federally mandated assimilation. By the early 1900s, the boarding schools were spread out over 15 states and territories. While at the boarding schools, the Native American children were punished for speaking Native American languages, practicing Native American religion, or participating in any form of traditional activities or ceremonies. Older children were groomed to police the prohibitions on Native language and culture (Stone, 2002). Forced assimilation was successfully destructive to many individuals and communities. In Canada, First Nations children experienced strikingly similar residential schools, which were paired with graveyards where the children would bury their classmates who died as a result of the abuse (Graham, 2017). Harmful effects of the boarding school era, including the loss of language, linger in tribal communities today.

Krauss (1996) explained that approximately 210 native North American languages are still spoken by families in the United States and Canada, out of the estimated 300 languages which were spoken before European contact. Approximately 175 of the 210 remaining languages are spoken in the United States; the other 35 languages are solely spoken in Canada. Out of the languages remaining in the United States, only about 20 of them, constituting 11 percent, are still being taught to children by parents and elders compared to 30 percent in Canada. Another category is languages still spoken by the parental generation, who could theoretically speak their native language to their children but generally do not. This category includes about 30 languages, amassing 17 percent, in both the United States and Canada. Large numbers of speakers do not ensure survival of a language; a language whose speakers are almost entirely over age 50 is in significantly more danger than a language with fewer speakers who are younger. A blind person

who cannot access the language in braille is at a disadvantage in speaking the language and is thus at a disadvantage versus a sighted print user.

Fricke (1998) provided a discourse of colonization as a central theoretical framework to enhance understanding of past and present relationships between First Nations people with disabilities and the rest of the people in Canada. Fricke argues that it can be helpful to dismantle negative or unequal power relationships preventing the right to self-determination. A post-colonialist framework can promote healing from the lasting effects of colonization and oppression of First Nations people with disabilities. Ethnostress is the confusion and stress associated with intergenerational trespasses against an indigenous culture and identity. Denied access to basic disability-related services and supports creates greater internalized conflicts within First Nations communities. Ethnostress is most intense when feelings of powerlessness and hopelessness engulf a community existence (Hill, 1992). Residential schooling aimed at isolating people with disabilities from the general public draws a strong parallel with the residential schooling isolating First Nations people. Both populations have long histories of genocide and of children being taken away from their parents. Both populations are heavily involved in programs and services regulated by governmentally-defined specifications. First Nations people with disabilities frequently find themselves in situations of governmental offloading; First Nations programs are unable to support their disability needs but then mainstream disability service programs are unwilling to serve them in First Nations communities. Some people with disabilities in First Nations communities have poor communication proficiency with others because opportunities to learn alternative methods of communication, such as braille, are not yet available to them. The creation of braille codes for First Nations languages can create a new state of the art for services to blind First Nations people and create a new basis for further improvements and innovation in service provision.

During the past several decades, there has been a major surge of efforts to revitalize Native American languages (Aguilera & LeCompte, 2007). In 2006, the federal Esther Martinez Native American Preservations Act, which funds immersion programming, demonstrated a commitment by the United States of America to the importance of saving Indigenous languages. In Minnesota, the two languages receiving the most attention have been Ojibwe and Dakota (Volunteer Working Group on Dakota and Ojibwe Language Revitalization and Preservation, 2013). The strategic plan of the Volunteer Working Group on Dakota and Ojibwe Language Revitalization and Preservation (2013) includes creating and improving access to language materials by establishing a clearinghouse for language materials. Furthermore, the plan has another goal of making Dakota and Ojibwe languages more important in public life by increasing the presence of Dakota and Ojibwe languages in tribal and mass-market media. Cantoni (1996) explained that writing a language was not sufficient to keep it alive, but that opportunities to practice it in informal settings were necessary, and that written materials, radio, and television broadcasts could help foster these opportunities. The Native American and First Nations community is undergoing a cultural innovation parallel to the one called for by Riccobono (2010) surrounding braille, and the spirit of cultural innovation perpetuates empowerment. In order for the blind to have equal access to these language materials and these tribal and mass market media, appropriate braille codes must be established. Language revitalization increases self-esteem and community cohesion, which are also needs of the blind (Jernigan, 1997).

Hermes and King (2013) found that Ojibwe families committed to reviving their language within their families could succeed. Their findings stressed the importance of the development of informal learning networks. In order for instructional materials to contribute to the revitalization of Ojibwa or other Indigenous languages, they must be integrated into a community of speakers who can thrive and interact outside of formal institutions (Fishman, 1991). These small communities need active participation in language revitalization, which creates opportunities for the integration of the blind. This will, of course, be facilitated well by the creation of proper braille codes.

Positive Externalities from One Language to Another

Many Indigenous North American languages do not have their own alphabets or syllabaries but rather adopted characters observed in the English alphabet. In fact, Sequoia's Cherokee syllabary is a writing system that was developed without a connection to any previous background in another writing system (Cushman, 2011; Kearney, 2015). Even though Cherokee has a braille code (Boston, 2014), it is not the largest Indigenous North American language spoken in the United States; its speakers are outnumbered by those speaking Navajo, Yupik, Dakota, Apache, and Keres (Siebens & Julian, 2011).

Indigenous North American languages can be grouped into families. Ojibwa, for example, is one of the Algonquian languages (Ojibwe People's Dictionary, 2015), with about 1,000 speakers in the United States and Canada (Hermes & King, 2013), most of whom are elderly (Treuer & Paap, 2011). Another example of an Algonquian language is Cree (Wolfart, 1996). The creation of a braille code for an Algonquian language, such as Ojibwa, could have positive impacts on non-speakers but also other non-Ojibwe native peoples. Let us consider the case of a blind Mi'kmaq. The Mi'kmaq are First Nations people of eastern Canada and some of New England in the United States (Coffin, 2003; Whitehead, 1991; Wicken, 1996). The Mi'kmaq language is also a part of the Algonquian language family (McMillan, 1988). If opportunities exist accessibly, a blind Mi'kmaq might be served by studying another Algonquian language, such as Ojibwa. Some other Algonquian-speaking peoples have actually converted to speaking Ojibwa, such as the Potawatomi in nineteenth-century Michigan (Rhodes, 1992). For a blind person wanting to learn Mi'kmaq or use Mi'kmaq braille, the existence of a braille code for another Algonquian language provides a stepping stone toward the creation of a Mi'kmaq braille code. If such similarity is symmetric, then the creation of a Mi'kmaq braille code would also make it easier to create a braille code for other Algonquian languages.

Importance of Braille Literacy

Experts in the blindness education field have long known the importance of teaching braille to any student for whom it is unrealistic to read regular print comfortably and competitively for a sustained period of time (Castellano, 2010; Holbrook, 2009; Ryles, 1996; Schroeder, 1997; Willoughby & Duffy, 1989; Wittenstein, 1994). Employment outcomes are far better for blind people who can read braille than for blind people who cannot (Bell & Mino, 2015; Bell & Silverman, 2018; Ryles, 1996; Silverman & Bell, 2018). Students of any language must have a reading medium; accessing information through auditory methods alone is not a substitute for

braille literacy (Erin & Wolffe, 1999). When blind people do not have access equal to that of the sighted in a given marketplace, it limits their consumer independence (Rinaldo, 2012). Braille is presumed the default reading medium for any blind or visually impaired child in the United States (Individuals with Disabilities Education Act, 2004; Miller, 2012). Ryles (1996) found that blind people who were taught to read braille spend more time reading than blind people who were not taught to read braille. If blind people are to learn these languages fully, spending more time reading them is better than spending less time reading them (Stanfa & Johnson, 2017).

Evolution of Braille Codes

Braille codes have been developed for some Native American and First Nations languages. Kearney (2015) discusses the development of a braille code for the Cherokee syllabary. There are 86 syllables in the Cherokee syllabary, each of which has its own symbol. To make sure that there would be enough one-cell braille symbols to support the syllabary, syllables that contain a combined consonant-and-vowel sound, viewed through a Western lens, were given two-celled representations. The braille symbols were derived from the Cherokee print symbols, Cherokee computer keyboard, and, as a last resort, similar sounds in the English alphabet. The Commonwealth Braille and Talking Book Cooperative has taken on an initiative to ensure that all languages typeset in Unicode also have braille equivalents (Boston, 2014). Cherokee is typeset in Unicode, which put it on the radar for the creation of a braille code. Cherokee and Inuktitut are both supported by Unicode, and the writing of the Inuktitut script was actually based on the Cree script, which was based on the Ojibwa script (Syropoulos, 2002). Perkins School for the Blind, International Council on English Braille, National Library Service for the Blind and Physically Handicapped, & UNESCO (2013) also mention the existence of Hawaiian braille, Samoan braille, and Iñupiaq braille. Hawaiian braille is managed by the Hawaii Department of Education, and Iñupiaq braille is managed by the Alaska Department of Education. Hawaii and American Samoa are Polynesian island states and thus continentally belong to Asia; however, the people of these states do not consider themselves to be indigenous to North America (Fogel, 1987; Kirch & Green, 2001). Biolsi (2005) writes that the perceived boundaries of Indian Country (a common colloquial term for areas with a strong presence of people identifying as American Indian) are often contained within the contiguous forty-eight states of the United States. Thus, there exists some debate as to whether Hawaiian or Samoan are Indigenous North American languages, though the lands where these languages originated are presently occupied by the United States.

The Navajo Braille Code

Begay Green (2016) describes the evolution of the Navajo braille code. In 2013, Begay Green, a teacher of the blind and visually impaired attended the Getting in Touch with Literacy conference in Providence, Rhode Island. She had only been a teacher of the visually impaired in Farmington, New Mexico, since 2010 after learning braille in 2009. At the conference, she inquired with the Braille Authority of North America about the existence of a braille code for Navajo, and the inquiry uncovered no existing code. She had studied Navajo at Northern Arizona University (NAU) in the late 1980's while earning her undergraduate degree in elementary education and had taught on the Navajo Nation for 15 years until getting her Master's degree in

special education in 2011 from New Mexico State University. Being half Navajo herself, but not being raised on the Navajo Nation, she had learned basic vocabulary from her grandparents as a child. She had wanted to learn how to have a conversation with her grandparents and learned to read and write Navajo at NAU. As her vision declined and she grew more proficient in braille, she wanted to continue reading and writing in Navajo. By 2013, she could no longer use print. By September of 2015, she had developed a Navajo braille code in consultation with a linguistics researcher from Rice University. In October of 2015, the Navajo Nation Department of Diné Education had approved the Navajo braille code which she had presented at their September meeting. The code consists of the Navajo alphabet, which uses Roman letters like in English, except for certain letters such as: f, p, q, r, u, or v. For the slash l, the dots 1456 are used and for the glottal stop dot 3 is used. In Navajo there are three vowel tones. There are the low tones, which include a, e, i, and o without any diacritical markings. There are the high tone vowels which have an accent above them in print. Using positive transference, the same braille dot configurations from American Spanish braille were used for these vowels: a is dots 12356, e is dots 2346, i is dots 34, and o dots 346. The third vowel tone is the nasal tone for which an indicator was chosen in order to keep the code simple and easy to learn, ensuring better success for all learners. The nasal indicator are dots 46 and are placed before either a low tone or high tone vowel. Navajo braille uses typical punctuation for braille otherwise. The code is currently being promoted in the blindness field, and an education program is being developed to teach the code across the Navajo Nation (Gashel, 2018). The National Federation of the Blind (2018) awarded \$5,000 through its Dr. Jacob Bolotin Award program to support this education program, which will include a comprehensive summer program for children and families.

Smith (2017) discusses the Navajo braille code and its emerging impacts. Since the code has specific pronunciation markings, it helps readers understand how to pronounce everything properly. Some academic scholarships have Navajo language competency requirements, and this code is helping to ensure that blind students can have a fair opportunity to compete for those scholarships. Navajo language is also being taught in schools, and this code helps promote those opportunities, as well. This code helps blind or visually impaired Navajos who are learning or using their traditional language to have the same opportunity as their peers. Begay Green travels across the United States presenting at conferences about the code and has one female Navajo student who is just learning braille in elementary school. As she progresses through school, she may want to take the Navajo language in junior high and high school, which will now be an option to her.

Stakeholder Participation

Caldwell et al. (2005) explains the importance of Native American community member leadership and participation in culturally competent research and development initiatives, especially Native Americans in the tribal communities being affected by those initiatives. In addition to promoting skill acquisition within the tribal community, tribal community members are less likely to express invalid or prejudicial stereotypes, misperceptions, or expectations about the tribal community. Because the rapport and communication between researchers and study participants is enhanced by the presence of tribal community members on the research team, the quality of any data collected will be enhanced as a result. Research that is both participatory and collaborative straddles the needs of both the researchers and the community. This balancing act

demystifies each group and builds trust, which is vital. To further establish trust, a clear and frank discussion of costs and benefits to the tribal community must be outlaid by the research team with space for open discussion. Also, since tribal communities are generally small and highly interconnected, confidentiality can be difficult to maintain. Different people at different levels of leadership in the tribal community may have different priorities, so it is important to come to a community agreement before moving forward in the research process. It is necessary for researchers to understand that their differences in task responsibilities with the tribal community members do not imply differences in status. Research must be a reciprocal relationship, where both the non-member researchers and the tribal communities share the responsibility of identifying problems to be researched. Davis & Reid (1999) argues that, if researchers use participants' ideas and time, they must give back in the form of resources, skills, training, or even employment.

Impacts of an Indigenous Language Braille Code

Blind people can play a role in revitalizing Indigenous languages and preserving culture. One of the most important components of achieving full equality for the blind is for blind people to participate in and make important contributions to their communities (Milner & Kelly, 2009; Omvig, 2002; Salisbury, 2018a, 2018b). Indigenous languages and knowledge are irreplaceable in the efforts of indigenous communities to recover from five centuries of European imperialism (Battiste, 1998). If a language is not used in international communication—in other words, if the language never spread to new countries via colonialism—that language truly belongs to its society and defines its culture (Whelpton, 2000). Fewer than one-half million people in the United States speak a language that is indigenous to North America (Siebens & Julian, 2011). With many Indigenous North American languages, the children are not learning the tribal languages as frequently as their grandparents did. For example, since most of the remaining Ojibwa speakers are elderly, if the language is not transferred to the younger generations soon, the language will die with its current speakers (Gresczyk, 2011; Hermes & King, 2013). The children and adults learning and using the language will need to learn its braille code if they are blind. People are needed for certain translations from print to braille because the braille code, based on Western European language structures, requires direct translation of thoughts; interpretation of the code requires intelligent contextual discrimination, which computer algorithms simply cannot bring to the table (Basu, 2002). Therefore, a standardized code will be necessary, and the humans who understand that braille code and its rules will also be necessary.

The emergence of each new braille code will directly empower an underserved population within the blind community and indirectly help empower many others. A digital divide between the blind of developing and developed populations is created because the technology-intensive systems for producing braille are not affordable to many economically developing populations, and the software involved in the creation of that braille is often created in languages and cultures which are foreign to the people who need to use them (Basu, 2002). Embossing and electronic production of braille becomes more possible once a formally approved braille code exists. Research on blind Native American and First Nations people functioning in their ancestral languages is limited if existent at all, but some lessons can be learned from studying similar populations. For an African parallel, blind Kenyans who speak Swahili and study at the university level essentially never have the opportunity to access books in braille; they must

depend on sighted readers, who sometimes only have English books to read to them (Ogechi & Boaire-Ogechi, 2002). Many people living in First Nations communities struggle with such desolate poverty that their daily financial decisions are based on survival rather than education (Shackel, 2008). If the Native American and First Nations braille codes are developed, then the blind Native American and First Nations people can have a fighting chance at financial independence and first-class status (Ryles, 1996).

For someone who is not born blind but rather becomes blind during life, experiences with blindness begin with the onset of blindness. There is frequently an initial sense of trauma associated with the initial onset of blindness (Silverman, 2015), but this trauma can be amplified by cultural barriers in healthcare. To return to the Mi'kmaq example, Baker, Daigle, Biro, and Joe (2000) investigated cross-cultural hospital care as experienced by Mi'kmaq people. Despite many cultural changes since European contact and the constant pressure to assimilate, the Mi'kmaq continue to retain a distinct identity. Their holistic view of health is entrenched in spirituality and the restoration of harmony and connections (Augustine, 1992). Ellingsen (1989) found that Mi'kmaq believe that health is attained spiritually by creating a link between past unity and a present situation of unity or disunity. Many Mi'kmaq turn to healing rituals, such as sweat lodges, and to traditional local plant medicines for basic healthcare (Lacey, 1993) but leave the First Nation community to seek provincial hospital services for more serious medical needs, such as the loss of eyesight. Sherley-Spiers (1989) examined perspectives of the Dakota people about client interactions with healthcare providers in southwestern Manitoba. Discrimination, stereotyping, and stigmatization were the major themes. Sherley-Spiers concluded that Dakota patients are much more likely than other patients to feel misunderstood by non-native healthcare providers. Browne (1995) conducted a qualitative study of definitions of respect in clinical interactions for Cree and Ojibway patients. Respondents reported more situations in which they had experienced disrespect versus respect. Components of respect were treating others as inherently worthy and equal, accepting others, listening to others, trying to understand others, and sincerity. Since these First Nations people frequently have these types of experiences in the healthcare system in the process of becoming blind, the introduction of braille codes for First Nations languages, especially their own, may promote a much-needed sense of understanding and feeling of equality. After all, developing a greater sense of control over one's life and self-efficacy is a vital part of empowerment of blind people and achievement of first-class participation in society (Mettler, 1995/2008; Omgvig, 2002; Salisbury, 2018a).

Implications for Practitioners and Families

Since there are currently very few braille resources for Native American and First Nations languages, the codes themselves will need to be created. The mechanics of this process can be relatively simple, but the politics behind them and the implementation of the braille codes are more complicated. Stakeholder participation and leadership, especially from native speakers of the language in question, is critical to preserve the integrity of the language, and their collaboration with braille experts is key to the viability of the braille code. If relevant Native American and First Nations language braille codes exist, blindness rehabilitation and education practitioners should introduce the option of learning the braille codes for their languages to Native American and First Nations students and consumers. In conjunction with the learning of such a braille code, the dissemination of braille materials in that language must be orchestrated.

For Native American and First Nations people, learning their languages pay positive dividends at the individual and collective levels; with braille codes, the blind in these communities have a fair chance for equal participation as language learners, speakers, writers, and teachers.

This article documents potential benefits and social impacts, thus demonstrating the value of creating braille codes for Native American and First Nations languages. This is not the same as telling an Indigenous nation that they need to adopt a braille code or that someone should make a braille code as a gift to an Indigenous people and offer it to them like a missionary. The interest and initiative cannot be purely external; such a project should be initiated by relevant stakeholders. If an Indigenous nation wishes to proactively create a braille code before a speaker becomes blind or before a blind person becomes a speaker, it is possible to create one. From the literature considered here, it appears that all Indigenous peoples and blind people can benefit from the existence of braille codes for Indigenous languages. If an Indigenous people can invent something better than braille, such an innovation could benefit all blind people. In the meantime, braille is a useful tool, which has been documented as crucial to the full participation of blind people in areas which constitute the ingredients of cultural participation, contribution, and revival. In summary, braille is a means to access language, language is intertwined in culture and is a keystone of Indigenous cultural preservation and revival, and thus braille codes for Indigenous languages enable blind people to contribute to such cultural preservation and revival.

Implications for Future Research

The governance of a given Native American language and the governance of braille codes are two silos which must intersect in order for the creation of a braille code for a Native American language to become maximally successful. More research could be done to investigate the political processes necessary in order to coordinate the governance of a braille code, as well as the mechanical processes of creating one. It appears that experts on braille codes and leaders of First Nations and Native American nations need to work together to establish and maintain such codes. Additionally, more research could investigate the coordination of the dissemination of braille materials, such as tribal newspapers and other publications, in these languages. More research could also investigate and document the different ways that braille codes can be used by Native American and First Nations people as learners, speakers, and teachers. Since braille codes for Native American languages are so new, the true impact of these codes is impractical to measure, even though the theoretical basis for having them seems quite strong. Eventually, empirical research can capture the impacts of these codes, possibly including longitudinal data.

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Author's Note

Some terms which appear in this manuscript may appear to vary from instance to instance but capture similar ideas. Indigenous North American culture and terminology vary somewhat by region; for example, the Ojibwe People's Dictionary (2015) explains that Ojibwe has been called by many names, including Anishinaabemowin, Ojibwe, Ojibway, Ojibwa, Southwestern Chippewa, and Chippewa. The authors left the terminology intact from the original articles as much as possible in an effort to respect local variations, as well as cultural traditions and meanings.

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