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# GAME-THEORETIC PROPOSALS FOR A WORKABLE REVITALIZATION CURRICULUM ON PINE RIDGE RESERVATION

JON COTNER

## ABSTRACT

*This paper proposes practical and implementable Lakota language programs for use in primary school classrooms on the Pine Ridge Reservation. By applying the Predictioneer's Model of the Game Theory to the most viable educational models for the reservation, the Lakota Full Immersion and Lakota/English Dual Immersion Models are found to be the classroom options that would be the most agreeable for all interested parties. The implementation of either of these models would enhance student scholastic performance, provide greater post-school opportunities, as well as provide incentive for the Lakota language within the community. The paper also discusses the current orthographic issues that are integral to the teaching of Lakota on the reservation.*

## 1.0 Introduction

For three thousand years, the language of the Sioux Nation echoed across the North American prairie, but today that voice is barely a whisper. The ravages of oppression and displacement have taken a heavy toll on all of the Sioux tribes, including the Oglala Lakota of the Pine Ridge Reservation. The Oglala Lakota are a resilient people, and they are making great strides toward preserving their heritage and language for future generations, but gains in this arena are hard-fought. This paper will use the Game Theory to assess options for teaching the Lakota language in primary schools on the Pine Ridge Reservation. The goal is to calculate the most likely educational outcome and provide thoughtful considerations that may assist the already strong efforts that are being made to preserve the Lakota language.

## 2.0 Languages of the Sioux Nation

Linguistically, the languages of the three core groups of the Sioux Nation are closely allied and are classified as dialects although, in current literature and for the purposes of this paper, they are referred to as two languages: the Lakota language and the Dakota language (which includes both the Santee-Sisseton and Yankton-Yanktonai dialects) (Ullrich, 2011, p. 2). The Lakota language has the largest number of speakers of all the Siouan languages (Ullrich, p. vii), and it also has the most linguistic resources and teaching materials available. Recent Lakota reference works also include coverage of the Dakota language (with both Santee-Sisseton and Yankton-Yanktonai dialects) and document the linguistic variation and its range of influence. It should be noted that grammars and dictionaries are also available specifically for the Dakota language. The three primary Sioux dialects (Lakota, Dakota/Santee-Sisseton, and Dakota/Yankton-Yanktonai) are mutually intelligible.

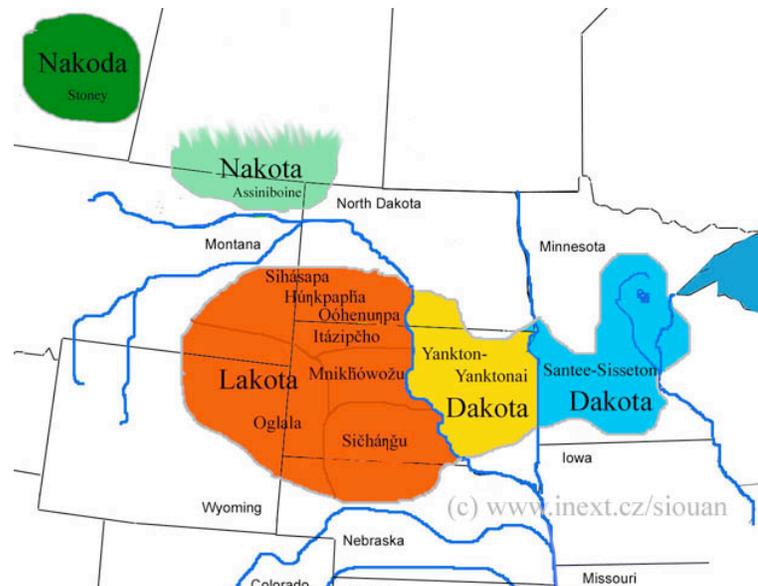


Figure 1: Distribution of Siouan dialect groups, ca. 1860.

(Retrieved from the webpage of J. Ullrich (2004): <http://www.lakhota.org/html/bio/JFU.html>)

The Lakota language is currently spoken by seven tribes (traditionally known collectively as the Thítuŋwaŋ or Teton, but the term Lakota, pronounced Lakhóta, is in current usage) that reside on five reservations in South Dakota, on the Wood Mountain Reserve in Saskatchewan, Canada, and in urban communities in North Central and Western United States (Ullrich, p. 7). In spite of the vast geographic range of its speakers, the Lakota language is “phonologically and grammatically quite homogenous” (Ullrich, p. 1) notwithstanding some lexical variations that occur from reservation to reservation. These lexical deviations usually fall between the speakers of the two southern tribes (Oglála on the Pine Ridge Reservation, the subject of this paper, and Sičhángu on the Rosebud Reservation) and speakers of the tribes that reside on the northern reservations (Mnikh’ówožu, Itázipčho, Sihásapa, and Óóhenuŋpa on the Cheyenne River Reservation and Húnkpáp̄ha on the Standing Rock Reservation) (Ullrich, p. 1). The issue of lexical variation is minimal in teaching the Lakota language compared to the century-old disputes on orthography.

### 3.0 Orthographic Development of the Lakota and Dakota Languages

Orthography is the indispensable ingredient without which language planning is impossible. Since the Dakota language is the eastern-most of the Sioux languages, it was the first to come in contact with missionaries and anthropologists. That initial contact was but the beginning of a long and arduous orthographic development timeline. In 1834 Episcopal missionaries Samuel and Gideon Pond, Dr. Stephen Riggs, and Dr. Thomas Williamson created a Dakota alphabet, with assistance from native speakers Michael Renville, Rev. David Grey Cloud, Rev. James Garvie, and Walking Elk (Williamson, 1992, p. vi). Proceeding from this milestone development, Riggs and Williamson compiled their 1852 *Grammar and Dictionary of the Dakota Language* (Williamson, 1992, p. vi). In 1892 Riggs published his *Dakota-English Dictionary*, and in 1902 Williamson published his *An English-Dakota Dictionary* (Williamson, 1992, p. vii).

These linguistic works in Dakota provided the basis for much of the work that was to follow in the Lakota language.

The first substantial Lakota dictionary was the typescript work compiled by Rev. E. D. Perrig, in 1904. This work contained between five and six thousand words, and was indebted to the earlier Dakota dictionaries published by Riggs and Williamson. This dictionary is notable because it was a primary resource used by the Jesuit missionary Eugene Buechel, who published the first Lakota grammar in 1939, his *A Grammar of Lakota*. Buechel's grammar and dictionary (edited and published posthumously by Manhart in 1970) was error-laden, but the two works provided "a viable written language" (Powers, 2009, p. 144) for Lakota. Lakota orthographic development continued with the work of a native Lakota linguist, Ella Deloria.

Raised on both the Yankton Sioux Indian Reservation and the Standing Rock Reservation, Deloria further honed the orthography of Lakota and worked with anthropologist and linguist Franz Boas to produce their *Dakota Grammar* (1941) (the work was titled 'Dakota,' but Dakota was used by her as a generic name for both Lakota and Dakota languages). The Columbia-trained Deloria was fluent in both Lakota and Dakota/Yankton and she continued her extensive and detailed linguistic and lexicographic work in Lakota until her passing in 1971.

The year 1971 also marked the inauguration of the first Lakota Language Conference, conducted by the Jesuit Fathers of the Red Cloud Indian School (Holy Rosary Mission). For this event, prominent linguists held court and preached to the native Lakota language teachers in attendance about the importance of form over content and the need for a standard Lakota orthography (Powers, 1990, p. 496). In colonial fashion, the Conference organizers invited none of the native linguists or speakers to participate. In turn, the discussions were dismissed by most Lakota teachers and linguists as "another example of patronization, this time under the rubric of linguistic hegemony" (Powers, 1990, p. 496). Despite the valuable efforts and unique native perspectives of gifted native linguists and teachers, their contributions are rarely included and they often experience first-hand what Powers calls "the politics of orthography" (Powers, 1990, p. 497).

The 1970s also ushered in an era where diacritics took a more vocal role in written Lakota. In the attempt to make Lakota pronunciation more precise, these added orthographic symbols had the unfortunate effect of making written text more difficult to read (Powers, 2009, p. 146-147). This movement toward greater phonetic precision accelerated in 1976 when two linguists from the University of Colorado at Boulder, Dr. Allen Taylor and Dr. David Rood, published their *Beginning Lakhota* (White Hat, 1999, p. 3). The Colorado system was viewed by most Lakota educators and linguists as unnecessary and "they were annoyed that still more white men were tampering with their language" (Powers, 2009, p. 147).

Largely in response to these Colorado orthographic developments, Lakota linguist and lexicographer Albert White Hat published his own Lakota grammar in 1999, *Reading and Writing the Lakota Language*. White Hat states that his grammar incorporates insights from Lakota culture and is based on consensus reached in 1982 meetings of Tribal Elders

and language instructors from Rosebud, Pine Ridge, and Cheyenne River Reservations, and Lakota educators from Sinte Gleska College (now University) and Oglala Lakota College (White Hat, pp. 3-5). Providing a local solution (that introduced yet another set of orthographic symbols) to the issue of written Lakota was an important element in the development of this grammar. In the words of White Hat, “we demonstrated that Lakota educators can collaborate and be active agents pursuing our own scholastic research” (White Hat, p. 5). White Hat’s confident assertion of orthographic primacy is an important milestone in native Lakota linguistics.

Not to be stymied, the more complex markings of the earlier Colorado effort were embraced and further amplified by Czech lexicographer Jan Ullrich. His work with the Lakota Language Consortium (out of Indiana University) continued in the spirit of the Colorado initiative and employed yet more diacritical qualifiers. Work both published and previously unpublished by Deloria, also an advocate of phonetic precision, was used in the creation of the *New Lakota Dictionary*. The Consortium’s orthographic system is the most concise, but the increased complexity that it brings to written Lakota has hampered its adoption. This timeline provides a dynamic glimpse at opposing forces that often characterize the politics that affect those living on the reservation, this time in realm of orthography.

#### **4.0 The Lakota Language and the Pine Ridge Reservation**

Despite the issue of orthographic contention, the vitality of the Lakota language is enviable over that of many other Native American languages in the United States and Canada. Lakota is estimated to be spoken by 8300 to 9000 persons, which makes it one of the most widely spoken Native American languages, but it is still far from secure. The number of speakers is decreasing yearly and the average age of these speakers is now 65 years old (Status of Lakota). According to a survey performed by Oceti Wakan (2007), 19% of the people on Pine Ridge Reservation speak Lakota, but less than 3% of the youth under 17 speak Lakota (cited in Valeš, 2007, p. 40). One of the reasons for this age discrepancy is the Lakota persecution instituted from the mid-19th century well into the 1970s as Lakota children were removed from their homes, sent to boarding schools, and forbidden to use their native language (K. Hunter, personal communication; White Hat, p. 1). The effects of this prohibition affected at least two generations with little or no inter-generational Lakota mother-tongue transmission (Valeš, 2009, pp. 126-7).

The Pine Ridge Reservation, which is home to the Oglala Lakota, is a 3,468 square mile reservation located in the south-west corner of South Dakota, and is the eighth largest reservation in the US. Enclosing over half of the Badlands National Park, the reservation has dunes, mesas, sand hills, native grasses, scattered evergreens, but little land suitable for cultivation. Lack of water and a severe climate present substantial impediments to agricultural use and there are no natural resource or mining opportunities available to the region. On this far from hospitable land, the 2010 Census recorded a population of 18,834, of whom 16,906 are Native Americans, but US Housing and Urban Development (HUD) accepted from an outside source a population of 28,000 to be more representative. According to the Tribal Government, this is at least 10,000 fewer people than their records show of 38,000 members living on the reservation (Re-Member website). The Department of the Interior (2005) posted the unemployment rate at 89% (US Census

Bureau). In addition to the bleak economic realities of the reservation, serious health issues are also rampant on the reservation leading to the lowest life expectancy rate in the US.

It is against this backdrop of economic and living hardship, native language persecution, and mixed orthographic loyalties that the glow of ethnolinguistic pride and increasing linguistic prestige can shine brighter. But if the Lakota language is to become a vernacular staple on Pine Ridge Reservation (it does have official status), how best should that be accomplished? To address this essential question concerning the life of the Lakota language, we will take a Game Theoretic approach. Specifically, we will use the Predictioneer's Model of De Mesquita (2009) and apply it in the fashion proposed by Koffi (2012).

### 5.0 Game Theory and the Lakota Language

The Game Theory can be used to determine the most likely outcome for the teaching of the Lakota language at primary schools on the Pine Ridge Reservation. The model calls for listing all the players (who are the people involved in the decision), their **Position** (their choice for the best possible model for teaching Lakota), their **Salience** (their interest in that outcome), and their **Influence** (the influence that they wield over others that are also involved in the decision). The formula of De Mesquita (2009) is:

$$\text{Weighted Mean} = \frac{I \times S \times P}{I \times S}$$

The game that we are playing with the Lakota language in primary schools on the Pine Ridge Reservation is a non-zero-sum game in which cooperation plays a role and the players can form coalitions, form counter-coalitions, bluff, and even bring into play the range of human emotions that can sway a decision. Currently, there is no player in this game with sufficient power to make this game a zero-sum game where winner takes all; however, that was the case when the reservations were created and the US government mandated English usage and forbade anyone speaking Lakota. For this analysis, we will determine mathematically the method of teaching the Lakota language in primary schools that would be the most beneficial for those on the Pine Ridge Reservation. The educational positions that will be considered are the following:

Educational Position	Scale
<b>Full Immersion Model (FIM)</b> which makes exclusive use of Lakota in primary school	100
<b>Dual Immersion Model (DIM)</b> which balances use of English and Lakota throughout primary school	75
<b>Language Maintenance Model (MM)</b> which uses English approximately 4 hours a day and Lakota 2 hours a day	50
<b>Heritage Language Model (HLM)</b> which uses Lakota for 1 hour a day	25
<b>Assimilationist Immersion Model (AIM)</b> which specifies use of English exclusively in primary school	0

Table 1: Position Matrix

In this Game Theory model, every player will be associated with one of the above positions, depending on their educational preference. The least advantageous position for the Lakota language is the Assimilationist Immersion Model. This position was in place on the reservation from the 1870s until the 1970s as English was the only language of instruction or communication; corporal punishment was common at all levels for speakers of Lakota. This position is no longer used in reservation schools. The Heritage Language Model employs a limited use of Lakota in the classroom. In the attempt to revitalize the language, this model has been used at most schools on the reservation since the 1980s (LoneHill, personal communication; Valeš, 2009, p. 127). The Language Maintenance Model has not been employed in primary schools on the reservation to date. The Dual Immersion Model was in use at one school in the late 1990s (Valeš, 2009, p. 137). The Full Immersion Model is currently being used by two schools on the reservation. With these education positions available, we now turn to the players that can influence these positions.

No.	Players	Influence Scale
	<b>parents, students, residents</b>	
1	parents (for)	50
2	parents (against)	50
3	parents (ambivalent)	50
4	grandparents and extended family (for)	45
5	grandparents and extended family (against)	45
6	grandparents and extended family (ambivalent)	45
7	students (for)	15
8	students (against)	15
9	students (ambivalent)	15
10	reservation residents (for)	10
11	reservation residents (against)	10
12	reservation residents (ambivalent)	10
	<b>teachers, school officials: secular</b>	
13	teachers in reservation schools (for)	60
14	teachers in reservation schools (against)	60
15	teachers in reservation schools (ambivalent)	60
16	reservation school principals	85

17	reservation school administrators	80
18	reservation school board members (for)	80
19	reservation school board members (ambivalent)	80
20	funding agencies	25
21	US Bureau of Indian Affairs officials	20
22	US Bureau of Indian Education officials	20
23	university president	95
24	university Lakota professors	75
	<b>teachers, school officials: faith-based</b>	
25	teachers in mission schools (for)	60
26	teachers in mission schools (against)	60
27	teachers in mission schools (ambivalent)	60
28	school principals (faith-based)	90
29	missionaries (faith-based school administrators)	80
30	funding agencies (faith-based)	90
	<b>tribal officials</b>	
31	tribal council president	95
32	tribal council executive committee	80
33	tribal leaders	70

Table 2: Players and their Influence

The list in Table 2 contains a catalog of all players that may have an interest in the selection of language education policies on the reservation. In terms of influence (which is the ability of an individual to induce decisions of other individuals or groups), comments should be made concerning some players. Family is important on the reservation and this is reflected in the elevated influence of extended family members. Oftentimes, households are multi-generational, and non-parental members can exert substantial influence in these settings. Within the secular school setting, school officials exert tremendous power while the US Bureau of Indian Affairs officials and funding officials exert little. The reason for this disparity in influence is that secular public schools on the reservation are contracted by the Bureau of Indian Affairs so those schools have complete autonomy for selecting their board, creating bylaws and goals, and developing curriculums (K. Hunter, personal communication). The insertion of university officials and professors as direct and influential players in primary school education is unexpected, but in 2008 the local university president worked with his Lakota Studies department to set up a K-12 immersion school on the reservation (*Lakota Country Times*, November 6, 2008). This is a welcome example of influence and power creating an opportunity for positive change. In the faith-based school systems, the school administrators and funding agencies all hold substantial influence, but it will be seen that the funding agencies are largely ambivalent about educational position. The final group of players includes the tribal officials. The tribe is governed by a Tribal Council, with one individual as its President; the tribal leaders included are without official capacity, but are viewed as individuals that hold sway over the tribal population.

The next factor in the weighted mean formula is salience. Salience is “the measurement of the level of interest” (Koffi, 2012, p. 65) that a player feels relative to their position. Well aware of the numerous forces tugging on the attention of all individuals, we will follow the De Mesquita (2009) method and assume that no one has 100% interest in an issue, just as no one is absolutely against an issue. The scales of 80-95 on salience reflect

a high interest in using the Lakota language in the primary school classroom, a scale of 50 shows an average amount of interest, and a scale of 10 indicates little interest in the Lakota language. The salience scales accord with what would be expected for the players, except for parents (*for*) and extended family (*for*). The scales for these players have been adjusted down because although most parents voice a strong desire for Lakota studies for their children and 51% of households have someone that speaks Lakota, few families actually make any effort to work with their children or reinforce the Lakota curriculum in the home (Valeš, 2009, p. 127-128). Having examined the components of De Mesquita's weighted mean formula, we can now turn our attention to the calculations for teaching the Lakota language in primary schools on Pine Ridge Reservation.

## 6.0 Weighted Mean Results

The weighted mean score of 88.96% (Table 3) does not align with any specific educational position for the Lakota language (see Table 1). Despite being almost equidistant between the FIM and DIM positions, the mean is a little closer to the FIM (11.04 vs. 13.96) which indicates that the educational position of full Lakota immersion for primary schools is the model that would be the most agreeable for all players. This weighted mean result is in agreement with a 2007 survey on the reservation that found residents overwhelmingly wanted FIM, but at that time no immersion schools were available (Valeš, 2009, p. 137). The weighted mean score of 88.96% is also very similar to the position that BlueArm found in her survey of Lakota language education preferences on the Cheyenne River Reservation in 1999. She found that respondents “indicated a slight preference for bilingual education as compared to immersion programs” (BlueArm, 2002, p. 171). The weighted mean score supports the findings of previous surveys concerning parents' views on Lakota language education, namely that either model of immersion will work: FIM or DIM. The reservation population would be happy with either outcome.

Parents have not been happy with the Heritage Language Model that is currently used extensively on the reservation. In the pointed words of Valeš, “[t]he teaching of Lakhota is in many cases more symbolic than a serious effort to save the language” (Valeš, 2009, p. 139). Parents see it as ineffective (Wright, 2007, p. 12; K. Hunter, personal communication) and with the limited amount of time allowed for Lakota, any cultural component takes precious time away from the language component (Valeš, 2009, p. 131). Valeš goes on to say that “Immersion is one of the efficient measures that can support the revitalization if introduced as a regular option in the school system” (Valeš, 2009, p. 140). The best chance the Lakota people have for preserving their language is through immersion programs, which are now available on the reservation.

No.	Players	Influence Scale	Saliency Scale	Position Scale	I x S x P	I x S
<b>parents, students, residents</b>						
1	parents (for)	50	75	100	375000	3750
2	parents (against)	50	10	0	0	500
3	parents (ambivalent)	50	50	50	125000	2500
4	grandparents and extended family (for)	45	75	100	337500	3375
5	grandparents and extended family (against)	45	10	0	0	450
6	grandparents and extended family (ambivalent)	45	50	50	112500	2250
7	students (for)	15	95	100	142500	1425
8	students (against)	15	10	0	0	150
9	students (ambivalent)	15	50	50	37500	750
10	reservation residents (for)	10	75	100	75000	750
11	reservation residents (against)	10	10	0	0	100
12	reservation residents (ambivalent)	10	50	50	25000	500
<b>teachers, school officials: secular</b>						
13	teachers in reservation schools (for)	60	95	100	570000	5700
14	teachers in reservation schools (against)	60	10	0	0	600
15	teachers in reservation schools (ambivalent)	60	50	50	150000	3000
16	reservation school principals	85	90	100	765000	7650
17	reservation school administrators	80	90	100	720000	7200
18	reservation school board members (for)	80	80	100	640000	6400
19	reservation school board members (ambivalent)	80	50	50	200000	4000
20	funding agencies	25	50	50	62500	1250
21	US Bureau of Indian Affairs officials	20	80	100	160000	1600
22	US Bureau of Indian Education officials	20	80	100	160000	1600
23	university president	95	90	100	855000	8550
24	university Lakota professors	75	90	100	675000	6750
<b>teachers, school officials: faith-based</b>						
25	teachers in mission schools (for)	60	95	100	570000	5700
26	teachers in mission schools (against)	60	10	0	0	600
27	teachers in mission schools (ambivalent)	60	50	50	150000	3000

28	school principals (faith-based)	90	90	100	810000	8100
29	missionaries (faith-based school administrators)	80	90	100	720000	7200
30	funding agencies (faith-based)	90	50	100	450000	4500
<b>tribal officials</b>						
31	tribal council president	95	95	100	902500	9025
32	tribal council executive committee	80	95	100	760000	7600
33	tribal leaders	70	95	100	665000	6650
TOTALS		1540	1800	2000	8887500	99900
WEIGHTED MEAN					88.96%	

Table 3: Weighted Mean Calculations

## 7.0 Full Immersion Model Implementation Payoff

If the Full Immersion Model were implemented more extensively on the reservation, the payoff for students would come in the form of greater cultural and ancestral context, as well as increased academic achievement and the benefits that this scholarship provides. Pease (2004) stated that “immersion improves overall educational achievement, strengthens family ties, and increases retention rates, keeping Native students in school who might otherwise drop out” (cited in Reyhner, 2010, p. 148). Thus the Full Immersion Model provides important elements that could prove crucial for young people navigating the challenging realities of the reservation and life beyond.

In addition to the student payoff, implementation of this model in more schools would provide a sorely needed commodity on the reservation: JOBS! With staggering unemployment on the reservation, any initiative that provides a decent wage and pleasant working conditions is a good initiative. And the possibilities are huge because, at least initially as the program is gearing up, the main requirement for employment would be proficiency in Lakota. Once under way, the increased demand for Lakota educators can be supplied by graduates of the Lakota Studies programs at Oglala Lakota College and Sinte Gleska University. The University of South Dakota and Sitting Bull College (ND) also have undergraduate programs for teachers of Lakota as a second language. Additionally, the impact of creating an entire crop of good jobs on the reservation would ripple into even greater prestige for the Lakota language.

In support of a Full Immersion Model, there would also be call for more Lakota educational materials (in addition to the numerous versions that are already available). Greater language prestige would precipitate its own set of new opportunities, including advertising in newspapers and radio, radio programs on reservation station KILI, and a need for timely newspaper articles in Lakota. The establishment of an indigenous Lakota language newspaper would also provide a component that has historically proven to be vital in successful language revitalization efforts (Koffi, 2012, pp. 307-308).

## 8.0 Cost-Benefit Analysis of the Lakota Full Immersion Model

While actual numbers are not available, there is a substantial amount that can be extrapolated from available information. In the case of the private/secular schools, we can

surmise from the decision of the Lakota Waldorf School that tuition income is enough to fund the move to a Full Immersion Model. In the case of the private/faith-based schools, the funding capacity of the Catholic Archdiocese is ample to cover the costs if adequate interest by the parishioners is present. Marketing for the faith-based schools is quite active, judging by the special interest articles and news clips; this was a reality shared by Ms. Hunter (personal communication). In the case of the Oglala Lakota College immersion school, both the capital and the staffing must have been available through internal college channels to set up their program.

In terms of language educational material, ample material is available in print so there is no need for new corpus development initially. Many schools remain sympathetic to the Buechel orthography in one form or another, and the availability of this almost century-old material must be plentiful. Although choice of orthography remains a point of contention, material available inexpensively or teacher-developed material could carry a program until funding was in place to purchase any desired materials. Language materials could be provided online, but access to a computer and an internet connection are not guaranteed for all reservation residents.

Although the Pine Ridge Reservation does not have a gaming casino for funding, other more affluent Native American Tribes tend to be generous and could provide assistance (*The New Lakota Dictionary* received funding from the Standing Rock Sioux Tribe and the Shakopee Mdewakanton Sioux (Dakota) Community). The cost-benefit analysis does not provide concrete numbers in support of implementation, but it can be inferred from available information that implementation would be possible.

## **9.0 Dual Immersion Model Implementation Payoff**

The weighted mean results indicate that the Dual Immersion Model also provides an educational model that would be agreeable for all players. If the Dual Immersion Model were implemented more extensively on the reservation, the payoff for students would come primarily on two fronts. The Lakota language instruction would provide a desired cultural and ancestral context, and the English language instruction would increase the possibility for off-reservation employment and opportunities. The benefit of increased academic achievement, proffered in association with the Full Immersion Model, would most likely also be fostered with the Dual Immersion Model. In addition, implementing the Dual Immersion Model would allay a critical parental fear that their children will not develop proficiency in Standard English on the reservation.

Many of the community advantages that were forwarded in support of the Full Immersion Model would also apply to implementation of the Dual Immersion Model. The need for educators with Lakota proficiency would still be called for under this model, and those employment opportunities are sorely needed on the reservation. In addition, the call for more Lakota educational materials would also remain, leading to more capital for those industries. Greater language prestige would be a precipitate from this model also, and the vital nature of this benefit cannot be understated for survival of the Lakota language.

## 10.0 Cost-Benefit Analysis of the Lakota Dual Immersion Model

While actual numbers are not available for implementing the Dual Immersion Model, the information that was extrapolated for the Full Immersion Model could also be utilized for this model. We can assume, from the information provided concerning the Full Immersion Model, that there is sufficient capital to implement the Dual Immersion Model since the DIM will require fewer changes to either the curriculum or the staff than the FIM. Lakota educational materials will still be required, but with half of the school curriculum still conducted in English, the need will be less. Given the hopeful cost-benefit analysis outcome of implementing the far more challenging Full Immersion Model, it should be inferred that implementing the Dual Immersion Model would be possible, and at a lower cost.

## 11.0 Likely Outcome of the Lakota Language Game

The call for immersion schools on the Pine Ridge Reservation started in earnest seven years ago, and there are now two immersion schools on the reservation. The Oglala Lakota College immersion school was started in 2008 and is now K-5, with a new grade being added every year (K. LoneHill, personal communication), and the Lakota Waldorf School made the switch to full immersion last year (Lakota Waldorf School website). The fact that immersion schools are being created as recently as last year is very encouraging. As an added incentive to learning the Lakota language, the Oglala Lakota College immersion school is giving students in the K-5 program \$100 twice a year for being in the program. Once these students are conversational in Lakota, the school has established an incentive program that will award them \$1000, and will continue to award them \$100 every year that they remain conversational (*Lakota Country Times*, November 6, 2008). Progressive immersion programs like this will be crucial to ensure the survival of the Lakota language, and their meaningful incentives may well lead to its blossoming.

A potential impediment to the success of a Full Immersion Model, but boost to a Dual Immersion Model, is that currently there is no refusal of English as the dominant language on the reservation (Valeš, 2009, p. 137). In turn, the motivation to not speak English and adopt Lakota is very low. In the same vein, parents do not want their children to lack valuable English language skills. As is the case in other indigenous language scenarios, “[t]he parents are afraid that speaking Lakota excludes the possibility of speaking good English” (Valeš, 2009, p. 138). As was mentioned previously, English is the language of choice in homes of the reservation so this fear is most likely one of standard English taught in school versus the vernacular ‘reservation English’ which is used socially. Although this issue of Standard English could be marginally accommodated in the Lakota grammar classes that would be part of any full immersion program, it would be better addressed in a dual immersion program.

The greatest linguistic impediment to a successful immersion initiative on the reservation is orthography...still. During the nineteenth century, the choice of orthography for teaching was based on religion: if the school was Episcopalian it taught the Riggs version, but if the school was Catholic the Buechel version was taught (White Hat, p. 3). Currently there are no less than three viable orthographic options for teaching the Lakota language. Sinte Gleska University and all schools on the Rosebud Reservation use the

White Hat grammar and orthography (Resolution No. 2012-343, effective 13 December 2012 on the Rosebud Sioux Tribe Education Department website). The Lakota Language Consortium orthography is used by Sitting Bull College, the Standing Rock and Cheyenne River tribes (Wikipedia, Lakota Language), and public schools in Shannon County, SD (K. LoneHill, personal communication). In addition, teacher-generated materials and variations on the traditional Buechel-based orthographic system are in use at primary and secondary schools on other Lakota reservations (Powers, 2009, p. 146; Valeš, 2009, pp. 131-132). The Oglala Lakota College Lakota Studies department uses a hybrid Buechel/White Hat orthography (K. LoneHill, personal communication), and presumably their immersion school does as well.

But orthography for the Lakota people has grown beyond mere marks on paper; it has become entrenched in the definition of identity. In the words of Powers, “the orthography, a major stumbling block in saving Lakota, frequently serves as a distinctive reservation, tribal, and individual marker” (Powers, 2009, p. 143). Given the ever-present Lakota history of struggle and enormous odds against outside forces, embracing an insightful indigenous orthography such as that of White Hat could bring with it an enhanced prestige for the Lakota people as well as for the language. Native speakers of any language require an accurate and expansive resource for word meaning and correct pronunciation, and the *New Lakota Dictionary* would serve that purpose well for the Lakota language. Lakota has been a written language for almost two hundred years, but the battle over the best written form cannot be allowed to rage on to the detriment of Lakota language acquisition.

## 12.0 Conclusion

The Predictioneer’s Model of the Game Theory predicts that either the Lakota Full Immersion Model or the Dual Immersion Model would serve the Oglala Lakota of the Pine Ridge Reservation well for their Lakota language needs. Both of these models advocate a substantial use of the Lakota language in the primary school classroom, an initiative that is also supported by recent surveys done on Lakota reservations. This important Native American language has a strong legacy of status and corpus planning. Acquisition planning, while also possessing an enviable history, is currently providing even greater opportunities for native Lakota proficiency. In addition, incentive planning is beginning to bear tangible fruit in the form of employment at immersion schools and in college Lakota Studies departments. If current trends continue unabated, the Pine Ridge Reservation has the potential to become a viable, vibrant Lakota language community.

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