Native Education Collaborative

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Culture and Language

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The National Comprehensive Center

The National Comprehensive Center (NCC) is one of 20 technical assistance centers supported under the U.S. Department of Education's Comprehensive Centers program from 2019 to 2024. The NCC focuses on helping the 19 Regional Comprehensive Centers and state, regional, and local education agencies throughout the country to meet the daunting challenge of improving student performance with equitable resources.

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Introduction

The National Center assembled a panel of experts in the field of American Indian and Alaska Native education from a broad constituency base to help determine current needs and interests in the field. Interviews conducted with the panel produced the following primary thematic categories:

Native culture and language

College and career readiness and access

Tribal consultation and sovereignty

Physical and behavioral health

Teachers and leaders

Promising programs and practices

The National Center's American Indian and Alaska Native Education Project developed the following briefs for each category to positively impact the learning lives of Native children and youth. These briefs are meant to enhance the effectiveness of state education agencies' work on Native education. Though tribal communities are very diverse, for the purposes of these briefs, the terms *American Indian and Alaska Native, Native, indigenous,* and *tribal* are used to refer to Native communities.

Native Education Demographics

According to the National Congress of American Indians (2020), during the 2010–11 school year, 378,000 Native (alone) students attended U.S. public schools, and 49,152 students attended Bureau of Indian Education (BIE) schools (of which there are 183 schools). In 2009, 69% of Native students graduated from school and, in 2010, Native students had the highest drop-out rate (15%) of all other students born in the United States (Van Ryzin, Vincent, & Hoover, 2016). While citing these widely available and accepted measures, inherent in them is the portrayal of a deficit view of Native educational success. Currently, Native scholars and education advocates are striving to change the narrative to a strengths-based approach examining the academic experience of Native students and identifying positive indicators associated with Native student success (CHiXapkaid, Inglebret, Krebill-Prather, 2011).

Native Identity

Identity lies at the center of Native education. All other components of Native education must first be seen through a Native identity lens to best comprehend this field. Generally, experts in the field discuss Native identity within three primary perspectives—cultural, biological, and political. These categories are not exclusive and often overlap, but they are useful in framing discussions around complex and, at times, contentious issues.

Cultural Identity

Many Native communities are working to revitalize their traditional cultural identities, which were severely disrupted during colonization. From a cultural perspective, Native identity stems from the history and traditions of their people. Spiritual ceremonies, clothing styles, music, stories, and housing are all aspects of cultural identity. Place-based identity is also a form of cultural identity where people identify with places where they have deep historical ties to the lands, waters, flora, and fauna surrounding them. Their languages and customs may also be interwoven with their surroundings. Names can also be important parts of cultural identity. Traditional names, like Anishinaabe, Lakota, and Diné, are often used interchangeably when referring to tribal communities and their citizens.

Biological Identity

Genetic and phenotypic identities define Native people from a biological perspective. A genetic Native identity assumes that a person has at least one biological Native parent. Regarding appearance, certain phenotypic traits can be common among members of specific Native communities. However, these traits can fall within stereotypes, and a person may be incorrectly identified as Native or non-Native due to their appearance, regardless of their genetics. So, some people may not culturally identify as Native at all, though others recognize them as such, and other may culturally identify as Native, though they are not recognized as such.

Political Identity

Political identity arises from the relationship tribal nations have within their nations internally and with other governments externally. Each tribe defines their internal political identities, such as an individual's tribal citizenship status. Native communities have varying levels of external political identities.

- **The U.S. federal government** maintains a list of federally recognized tribes that are eligible for a range of federal services. According to the National Congress of American Indians (2020), there are currently 574 federally recognized tribes. Federal legal documents often use the term *Indian* when referring to Native communities.
- **State governments** maintain lists of state-recognized and/or state historic tribes, which may not be recognized at the federal government level.
- **Some tribes** are not recognized by the federal or state governments.
- **Tribal governments** interact with other tribal nations and the state and federal governments in the interest of their own sovereignty.

The rights of tribes and tribal citizens may impact Native education laws and policies, like consultation requirements or a student's right to wear eagle feathers and traditional regalia to their graduation ceremony. Reminding state-run public school officials about educational treaty rights is important because it represents an external relationship between the tribal nation and the state.

Native Culture and Language

Native education is rooted in the Native cultures and languages of North America. This brief provides key insights and examples of the work accomplished in Native education across the United States to revitalize and strengthen Native cultures and languages. This brief focuses on the following themes:

- History and culture in curriculum for all students,
- Place-based tribal history and culture,
- Place-based tribal language and language immersion, and
- Culture-based and culturally responsive teaching.

History and Culture in Curriculum for All Students

Native students attend schools that serve students with a variety of ethnic and racial backgrounds. Tribal reservations generally have high-density Native populations, but many non-Native citizens can live on reservations, as well. Families may have mixed Native and non-Native members and many government and organization employees (including educators) in tribal communities are also non-Native. Alternatively, there are areas outside reservation lands that also have dense Native populations, such as urban centers like Detroit, MI; Denver, CO; and Phoenix, AZ. Urban centers often feature a mix of Native people from several tribes who have varying Native languages and cultural traditions. However, the existing literature on Native education focuses primarily on schools serving mostly Native students. Ngai and Koehn (2016) assert that "there is an urgent need for research on the connections between legislative acts and practices in schools serving mixed Native and non-Native students" (p. 24).

Inclusion in All Native Education

Reinhardt and Maday (2006) include a model in their manual called "The Branches and Roots of American Indian Education," (Figure 1) which shows the evolution of Native education from its roots in indigenous knowledge systems to present day. The model depicts indigenous knowledge systems as the root system of Native education, which stems up through the trunk of the tree. From there, the model differentiates between the education of Native and non-Native people, and the trunk then splits into two main branches:

- education if Native students and
- education of non-Native students about Native people and their histories, issues, and current events.
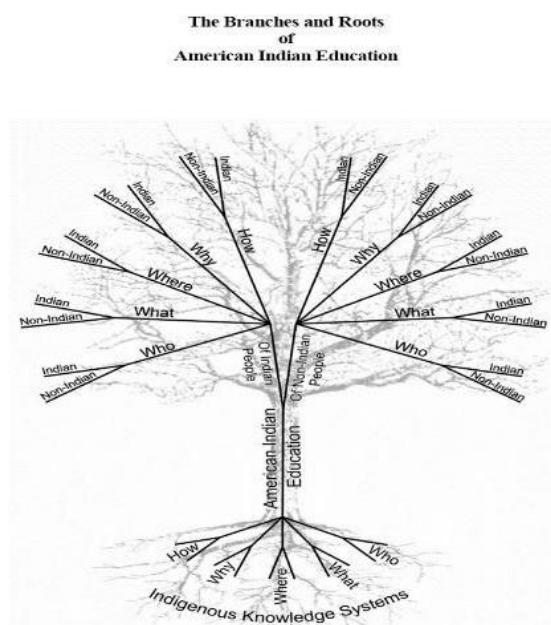

Figure 1. The Branches and Roots of American Indian Education (Reinhardt & Maday, 2006, used with permission)

The authors explain that, while most people think of education of Native students when they hear the term *Native education*, the second branch is equally important. The authors note that "both branches must be nurtured for the tree to grow strong and healthy. Likewise, attending to the educational needs of both populations is important to grow an informed and civil society" (Reinhardt and Maday, 2006). Montana's Indian Education for All law requires k-12 curricula to include American Indian content or perspectives for all students, which exemplifies what Reinhardt and Maday (2006) call for in their manual. Likewise, Washington state SB 5433 also mandates that that tribal sovereignty curriculum, Since Time Immemorial, be taught in all public schools. These mandates includes two strands:

- Educating all students (regardless of cultural/ethnic background) about their state's tribal history, cultural, and perspectives; and
- Improving the education of Indian students.

Under Indian Education for All, Ngai and Koehn (2016) add that mainstream classrooms "should aim to sustain and revitalize local Indigenous cultures" (p. 28). All students can then learn to value Native people and their ideas through exposure to a well-developed curriculum that is free of anti-Native biases. This education, for Native and non-Native students, can have long-lasting, positive educational benefits and help repair relationships between Native and non-Native people.

Relationship-building with Native Communities

Ngai and Koehn (2016) assert that "relationship building is especially important in schools serving American Indian populations" (p. 27). Reinhardt and Maday (2006) recommend an Indigenous interdisciplinary thematic unit (IITU) approach to include Native content in the curriculum. An IITU approach can help students connect Native concepts with general education. This approach becomes even more effective when it aligns horizontally with more than two disciplines at a particular grade level, and when it aligns vertically with curricular activities in lower and higher grade levels.

The most effective IITUs expand into the community and involve families, community organizations, government, and businesses. The more the IITU reflects the reality of the students participating in it, the more successful it will be. Ngai and Koehn (2016) state that "in settings where non-Native teachers serve Native children, partnerships between teachers and parents become vital in contributing to the decolonization and indigenization of education" (p. 28).

To properly include Native education in the curriculum, lead author Ngai suggested non-Native teachers:

- learn about the local tribes and become familiar with the resources for Native education that are available in the library,
- explore sustainable processes to build partnerships between Native families and teachers to support Indian Education for All implementation, and
- collaborate with the local Native community members on what to include in the classroom and curriculum. (Ngai and Koehn, 2016)

Teachers who partnered with Native families saw the most success and "managed to attain net shifts toward positive attitudes regarding American Indians and cultural diversity generally among their students by the end of the academic year" (Ngai & Koehn, 2016, p. 44).

Place-Based Tribal History and Culture

Tribes' histories and cultures are rooted in their traditional homelands, which is known as place-based cultural identity. Tribes have existed for thousands of years in places that were central to their identity formation. Although many tribes were relocated from their original lands, they retain the ties to their original homes while further developing their identities within their current locations.

Deloria and Wildcat (2001) posit that place-based identity informs the principles of power and place within Native ways of knowing, "power being the living energy that inhabits and/or composes the universe, and place being the relationship of things to each other" (pp. 22-23). The authors go on to say that "power and place produce personality" (p. 23). They further assert that Native education should include the tribes' existing conditions, its history, and its culture, regardless of its present location.

Place-Based Knowledge Systems

Environmental relationship, myth, visionary traditions, traditional arts, tribal community, and nature-centered spirituality have traditionally formed the foundations of American Indian life for discovering one's true face (character, potential, identity), one's heart (soul, creative self, true passion), and one's foundation (true work, vocation), all of which lead to the expression of a complete life.
(Pewewardy and Hammer, 2003, p. 4)

Cajete (1994) explains that traditional Native ways of knowing were meant to produce a functioning, self-actualized human who could survive and thrive in the surrounding environment. According to Reinhardt and Maday (2006):

> Whether a child was listening to oral traditional stories in a wigwam, learning to paddle a kayak across the water, or being taught how to properly plant corn in the arid southwest, education happened most often in the physical place where the knowledge was to be applied… This meant that every place was a potential classroom, every situation was a potential learning experience, and people had the potential to be the teacher of another. (p. 26)

Pewewardy and Hammer (2003) advocate for programs that connect students with Native ways of knowing. The authors explain, "When schooling provides children with the knowledge, language, and skills to function in the mainstream culture but also honors and provides opportunities for students to learn more about their Native language and culture from elders and others in the community, a true respect for diversity is demonstrated" (p .4).

Little Axe, Lloyd, and Warner, (2013) also include place-based knowledge in their definition of Native ways of knowing. Their institution, Northeastern Oklahoma A&M College (NEO College), created a model to embed Native ways of knowing in its curriculum development by linking where students live and learn with the history of NEO College, the local American Indian tribes, and the students' communities. They explain that, through this curriculum, NEO College "emphasized constructivist learning processes that encourage authentic exchanges, instructive demonstrations and the opportunity to focus on real-life applications" (p. 34).

Deloria and Wildcat (2001) discuss the importance of incorporating modern technology into curricula. Though it is not traditional, it adds to a sense of place. The authors suggest that "technology, community, communication, and culture are intimately related" (pp. 72-73), and disengaging from technology would "create cultures and forms of communication that are relatively abstract" (p.76).

Aligning Assessments with Native Values

Coles-Ritchie and Charles (2011) reported on an initiative in which "teachers indigenized assessment by 'drawing on the power of their place' (Deloria & Wildcat, 2001) to align assessments to the values, symbols and practices of their communities" (pp. 26-27).

> Deloria and Wildcat's (2001) four steps to indigenize assessments:
>
> - Develop a classroom community,
> - Recontextualize concepts to reflect local NATIVE practices,
> - Develop ways to challenge the dominant standardized assessment practices, and
> - Authentic assessment measures developed by teachers drawing on Native local practices and community funds of knowledge.

These steps allow Native students to identify with the assessment measures in ways that may have been less accessible otherwise. This practice also allows non-Native students to see concepts through an alternative lens.

Place-Based Tribal Language and Language Immersion

According to McCarty, Amanti, Neff, and Gonzalez (2006), "linguists estimate that prior to European contact, some 300 to 500 Native languages were spoken by the peoples indigenous to what is now the United States and Canada" (p. 29). While it is estimated that more than 200 Native languages are still spoken across North America, the authors report that "only 34 are still being naturally acquired as a first language by children" (p. 29). The 2005 American Community Survey (ACS) results estimated that there were fewer than 372,095 Native language speakers in the United States. According to the U.S. Department of Commerce (2011), "the size of the Native North American language speaking population is dwarfed by the 60 million people speaking a different non-English language and the 227 million people who speak English only" (p. 1).

The United Nations Educational, Scientific and Cultural Organization (UNESCO, 2020) says that nearly 200 Native languages are currently endangered in the United States. A language is endangered when it is on a path toward extinction. Without adequate documentation, a language that is extinct can never be revived. Although all tribes are concerned about the state of Native languages across the United States, some tribal communities are faring better than others in this area. As such, where one tribal community may be working to revitalize their Native language, another tribe may be fighting to retain theirs.
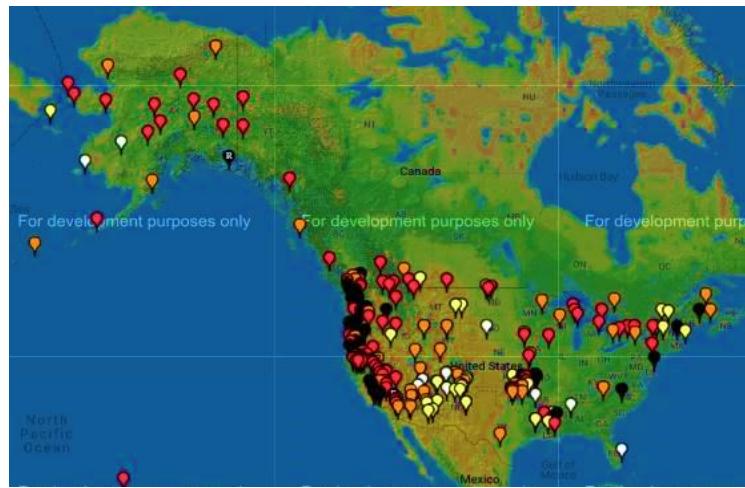

Figure 2. UNESCO map of endangered Native languages in the United States. Note: This map does not include languages that are already extinct.

The Need for Local Language Education

McCarty (2011) says the issue "is not whether schooling based on Native students' tribal language and culture is beneficial, but rather which approaches are most effective and under what conditions" (p. 2). Pointing to student diversity, McCarty warns against a "one-size-fits-all approach," as educators must "attend closely to local language and culture practices *in situ*" (p. 4). Little Axe et al. (2013) explain that "each indigenous community belongs to a specific language group and recognizes and practices cultural traditions in combinations that distinguish communities from each other, especially to insiders. Some indigenous communities share a language heritage or land base, yet remain distinct in other characteristics" (p. 33).
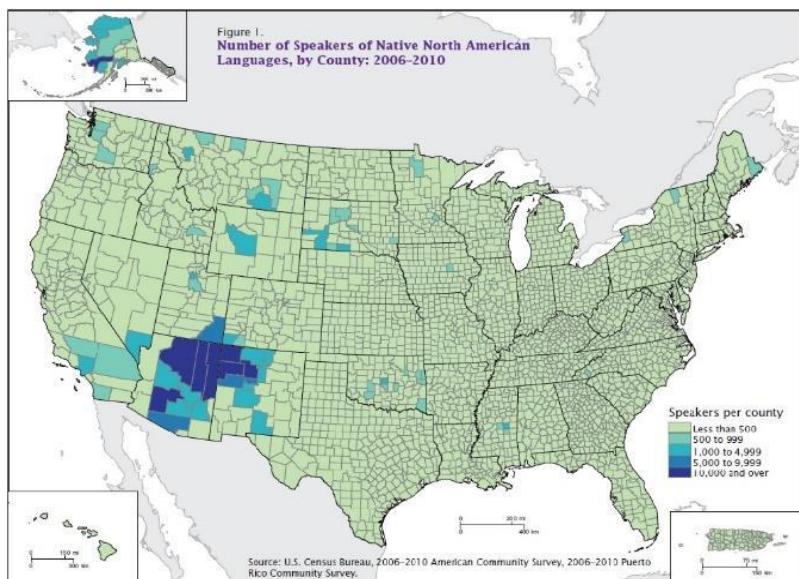
Figure 3. U.S. Census map of Native language speakers in the United States

McCarty et al. (2006) "explore the personal, familial, and academic stakes of Native language loss for youth" (p. 30). Their data are based on youth in grades 4 through 12 at five school-community sites in the U.S. Southwest. They selected the sites based on their tribal language representation and language vitality within rural reservation and urban settings.

McCarty et al. (2006) found that "many youth are deeply concerned about the crisis of Native language loss… Youth interests in retaining

the language and their linguistic proficiencies constitute crucial resources to be tapped in tribal-community efforts to revitalize heritage languages" (p. 42). They report that their data "illuminate a complex interplay of personal and interpersonal processes in language loss and reclamation, as those processes are shaped by and shape racialized discourses and larger relations of power" (p. 42). The authors explain that youth and adults expressed pride in their Native language, but were keenly aware of the privileges associated with the English language regarding modernization and opportunity.

Ahlers (2006) asked how communities struggling with language revitalization use their language. The author's study of public Native language use by non-fluent speakers found that the speaks chose to present their speech in the Native language to "highlight a broader Native American identity shared by speaker and audience and to create a discourse space in which a subsequent speech given in English is nevertheless understood by audience members to come from, and to be informed by, a Native identity" (p. 58).

Based on the results of a feasibility study, Beaulieu (2006) found that student who knew their Native language tended to do well in school. The author asserts that "the use of the Native language in that community to support social interaction within the extended family" (p. 51) contributed to this success. The school from this study had developed a program with strong parental and community involvement and used the Native language within the educational program" (p. 51).

Native Language Programs

In her report on Native language immersion schools and projects, Pease-Pretty On Top (n.d.) explains that the "programs are characterized by Native ways of knowing, learning and Indigenous knowledge" (p. 8). At the time of the report, Pease-Pretty On Top counted 50 Native language immersion programs, including year-round schools, summer and seasonal camps, and weekend retreats and seminars. The author explains that these programs provide education exclusively in the Native language, and they primarily follow the Total Physical Response methodology. Pease-Pretty On Top (n.d.) identified the following five key motivating factors for Native language immersion.

1. **Severe Native language fluency losses:** Of the Native languages still being spoken in the United States, most are spoken only by elders.
2. **Language immersion positively impacts educational achievement:** Nationally, students who took foreign languages for 4 years scored higher on standardized tests, including the SAT.
3. **Greater preservation and revitalization of culture and language is connected to the greater Native community:** Language loss happens to the dispossessed and disempowered, people who most need their cultural resources to survive.
4. **Native culture and language positively affect tribal college student retention:** Five tribal colleges studied student retention rates, and culture and language teaching and experiences positively correlated with student retention toward graduation.
5. **Native leaders identify language immersion as a strategic counter to the devastating effects of American colonization of Native people:** Learning the tribal language can help maintain and revitalize Native culture.

Pease-Pretty On Top (n.d.) provides evidence of the positive impact of Native language immersion in her report. She cites data from Navajo, Blackfeet, and Assiniboine immersion schools where the students consistently experienced greater academic achievement based on local and national measures. The author includes Native Hawaiian language immersion school data. "Twenty-two Hawaiian public schools have 'Ke Kula Kaiapuni' immersion streams and/or entire schools. In these schools, 1700 students are enrolled, and outperform the average for Native Hawaiian children in Hawaii public schools" (Pease-Pretty On Top, n.d., p. 16). Lastly, she asserts that students attending "Maori Language Immersion Schools demonstrate astounding educational achievement," (p. 16) rising from a low pass rate of 5% to a high of 75% based on the immersion programs. Further, McCarty (2014) explains that a New Zealand government commission found that the stronger a child's skills in their Native language, the more likely they are to be successful in English, which falls under the "Language Interdependence Principle" (p. 2).

Reinhardt (2017) shares curriculum development ideas for effective pedagogy and lesson planning that align with Native language standards. Reinhardt (2017) asserts that educators first need to understand the core relationships of Native language immersion programs, which include Native languages, Native language teachers, and general education teachers. While both types of teachers share special knowledge with the Native language learners, Reinhardt (2017) explains that Native language learners especially benefit when these teachers are actually the same person, as educational interactions are enriched culturally and linguistically. Reinhardt (2017) points out that Native language learners may be at different places in learning the language. He states, "Whether they are non-Indigenous first language only at one end, or Indigenous first language only at the other…this model assumes that either type of learner can attain bilingual status in the middle" (p. 3).

> Reinhardt's (2017) recommendations for Native language programs:
>
> - do not force the program on the student,
> - encourage parent and family participation,
> - draw on the student's use their first language as a strength,
> - provide full-day or most-of-the-day programs,
> - ensure continuity between the school year and summer activities,
> - provide culturally appropriate education across the curriculum, and
> - ensure anti-Native bias does not enter into the experience.

Reinhardt (2017) notes that issues of identity, cultural/historical/linguistic accuracy, generalizability, credibility, invisibility, tokenization, fragmentation, isolation, stereotypes, and unreality can negatively impact the immersion experience.

Culture-based and Culturally Responsive Teaching

Demmert and Towner (2003) assert that schools need to determine how to meet the academic needs of the students and communities they serve within a supportive cultural context that will create good, knowledgeable, and wise people. "There is a firm belief within many Native tribal communities and professional Native educators that this cultural context is absolutely essential if one is to succeed

academically and to build a meaningful life as adults" (Demmert and Towner, 2003, p. 1). This culturally based education (CBE) creates learning environments that are culturally responsive to the tribes' traditions, knowledge, and language.

Understanding Culture-based Education

Based on his study of federal Indian education grants, Beaulieu (2006) categorized CBE into five distinct categories (p. 56):

- culturally based instruction,
- Native language instruction,
- Native studies,
- Native cultural enrichment, and
- culturally relevant materials.

Demmert and Towner (2003) found that the literature on CBE for Native youth is severely limited. Based on a select number of qualitative studies, the authors provide the suggestions listed in Table 1 for CBE research models appropriate for a national study of Native education. Also listed in Table 1, Demmert et al. (2014) provide suggestions for Native CBE rubrics based on a 2008 research partnership between schools and other institutions that incorporated CBE into their curricula and programming.

Table 1. 6 critical elements of CBE research models and 5 Native CBE rubrics

Critical elements of CBE research models (Demmert and Towner, 2003)	Native CBE Rubrics (Demmert et al., 2014)
- recognition and use of Native languages - pedagogy that stresses traditional cultural characteristics and adult-child interactions - pedagogy in which teaching strategies are congruent with the traditional culture and ways of knowing and learning - curriculum that is based on traditional culture and that recognizes the importance of Native spirituality - strong Native community participation (including parents, elders, and other community resources) in educating children and in the planning and operation of school activities - knowledge and use of the social and political mores of the community	- culture-based Native language use rubric - culture-based pedagogy rubric, - culture-based curriculum rubric - culture-based patterns of participation in leadership and decision-making rubric - Culture-Based Methods of Assessing Student Performance Rubric

Incorporating Culture-based Education

Gilbert (2011) asserts that CBE is often absent from school curricula due to an assumption that Native language and culture "must be taught separately from other content areas which would require additional time and resources to implement successfully" (p. 44). However, the author explains that schools can integrate Native language and culture using an interdisciplinary approach, as "it is compatible, complementary and enhances knowledge and academic achievement" (Gilbert, 2011, p. 44). Gilbert (2011) suggests that CBE can be accomplished by all teachers.

> Regardless of whether a teacher is Native or non-Native, culturally based education focuses on helping all teachers to be skilled in cultural and linguistic inclusive practices that recognizes and affirms cultural-based strengths in inquiry, problem-solving and learning for the benefit of all students.
> (Gilbert, 2011, p. 45).

Further, Lopez, Heilig, and Schram (2013) also assert, "AIAN [American Indian and Alaska Native] teachers are more likely to have the necessary knowledge to incorporate heritage language and culture into instruction, and are role models for their students—a factor that has been associated with academic success for AIAN students" (p. 519).

Measuring Culture-based Education

Lopez et al. (2013) conducted a study of CBE focused on Native student academic achievement using the outcomes of the National Assessment of Educational Progress (NAEP) and the National Indian Education Survey (NIES). They researched (1) how cultural experiences relate to Native student achievement, and (2) whether the NIES reflects a culturally responsive-sustaining (CRS) education framework. The authors point out that the NAEP provides common metrics to assess academic skills, whereas the NIES depends on teachers' and students' perceptions of how the school incorporates CRS. The authors note that the literature on cultural identity development must also be considered to more accurately assess how CRS influences Native students.

Lopez et al. (2013) assert that the NIES, however, introduces two challenges:

- "For children, this dependence may introduce issues related to developmental factors (i.e., can children identify cultural experiences?) that necessitate inspection of the concordance between teacher and student answers" (p. 519).
- "Asking students questions about the degree to which teachers incorporate culture is insufficient to assess CRS" (p. 530).

Van Ryzin et al. (2016) submit that the lack of empirical data surrounding Native CBE may "be related to the lack of a common understanding of exactly what it means to integrate Native Language Culture (NLC) into classroom instruction" (p. 5). The authors "argue that a key to establishing a more formal

science around use of NLC in classrooms is the establishment of a common measurement approach" (p. 5). Van Ryzin et al. (2016) assert that their study provides "a scientifically defensible definition of the use of NLC in instruction" (p. 11).

Drawing on data from the 2009 and 2011 NIES, the authors conclude that "the nature of using NLC in instruction" is "multi-dimensional" (p. 11-12). "It is quite possible that different dimensions would be more central to different types of students (e.g., those who do vs. do not speak indigenous language in the home) attending different types of schools (e.g., BIE vs. non-BIE school)" (Van Ryzin et al., 2016, p. 13). The authors surmise that an assessment of relationships between dimension could allow "nuanced analyses of the relationship between use of NLC and AI/AN student outcomes which can then inform the development of interventions specifically designed to improve AI/AN student academic and behavioral success" (p. 13).

In her exploratory study of the relationship between CBE and urban Native youth, Powers (2006) hypothesized that an investigation into the direct and indirect effects of CBE could lead to a understanding of its level of effectiveness. The author suggests that "an empirically supported model of school learning for urban American Indian students can assist educators in developing interventions for this population of students who experience considerable school failure" (p. 32).

> Demmert's (2011) recommendations to effectively measure CBE:
>
> - Recognize that CBE programs will differ based on the various Native student groups that attend the school.
> - Develop assessment tools that accurately measure how well the school's CBE program reflects the student community.
> - Ensure assessment tools are linguistically and culturally appropriate to meet the needs of the community.

Challenges for Incorporating Culture-based Education

The primary obstacles in integrating NLC into instruction are a lack of funding (Martinez, 2014) and a focus on overly simplified approaches limited at the expense of systemic change (Castagno & Brayboy, 2008). Additionally, Van Ryzin et al. (2016) found that teachers often receive little guidance on how to effectively integrate NLC into their curricula.

> The extent to which teachers integrate NLC into instruction can be measured by their engagement with available resources to improve their knowledge of Native culture and traditions, as well as by the extent to which they anchor…instruction on concepts, issues, and ideas relevant to AI/AN students… Teacher access to professional development in indigenous culture and traditions as well as encouraging teacher use of specific aspects of Native culture (e.g., history, traditions, art, music, tribal government) represent independent dimensions of NLC use at the school level. (Van Ryzin et al., 2016, p. 12)

Potential Outcomes for Culture-based Education

Van Ryzin et al. (2016) provide a long list of scholars and publications that recommend "that schools increase the cultural relevance of curricula and emphasize NLC in instruction... to increase AI/AN students' motivation and engagement in school and decrease widespread discipline problems and high drop-out rates" (p. 3). In summary of the scholar's suggestions, NLC can:

- Decrease students' inappropriate behavior, including non-compliance with teacher demands, disruption, or being tardy or truant, through culturally supportive and meaningful social environments (Bishop et al., 2009; Castagno & Brayboy, 2008; Reyhner, 1992; Swisher, Hoisch, & Pavel, 1992) and
- Increase students' perceptions of the relevance of the curriculum and their engagement with it (Brayboy et al., 2015; Chavers, 2000; Faircloth & Tippeconnic, 2010; McCarty & Lee, 2014; Trujillo & Alston, 2005).

> Van Ryzin et al.'s (2016) suggestions for operationalizing NLC:
>
> - **Student level** – Provide hands-on learning and validation of Native identity through the use of Native language, culture, and history (Brayboy et al., 2015; Castagno & Brayboy, 2008);
> - **Teacher level** – Provide student-centered instruction and use Native languages as vehicles of Native culture and traditional knowledge (Bishop et al., 2009; Brayboy et al., 2015; Brayboy & Castagno, 2009);
> - **School administrator level** – Promote community involvement (Castagno & Brayboy, 2008; CHiXapkaid et al., 2008; Keeshig-Tobias, 2003; McCarty & Lee, 2014; Tsui & Alanis, 2004) and explicitly acknowledge the history of tribal self-determination, institutionalized racism, and the need for systemic change (Castago & Brayboy, 2008; McCarty & Lee, 2014).

In a subsequent study, Van Ryzin and Vincent (2017) hypothesized "that students with a stronger cultural identity will be linked to less negative and/or more positive effects of NLC on mathematics achievement" (p. 6). Their findings show, "NLC was most successful with students who possessed the strongest Native cultural identification and who attended schools with the highest percentages of AI/AN students" (p. 28). The authors conclude, therefore, "that greater cultural alignment between home and school can be beneficial for AI/AN students" (p. 28).

Members of the 2015 NIES Technical Review Panel (2019) stated, "positive academic outcomes can be evidenced when AI/AN youth are exposed to and participate in learning environments that recognize and honor their linguistic, cultural/tribal, and academic diversity" (p. 3). The panelists note that "results from NIES do not provide sufficient data to identify, develop, or implement culturally relevant and responsive educational practices for AI/AN youth" (p. 3). They further explain that these limitations "are directly related to the design of the study, which is non-experimental and cross-sectional. As such, NIES is only able to provide a snapshot, rather than a more detailed picture, of the state of Mathematics and

reading achievement and AI/AN youth's exposure to Native languages and cultures within schools" (p. 3).

According to Powers (2006), the results of her "study suggest that culture-based programs influence urban American Indian students' educational outcomes by enhancing those educational conditions that promote school success for all students" (p. 42). The author also found that "some American Indian students may benefit more than others from educational practices grounded in Native culture. Cultural programming was found to be more strongly associated with the school outcomes of students who most strongly identified with their Native culture" (pp. 42-43).

Balancing School Climate with Culture-based Education

Beaulieu (2006) predict that social activities in schools would be the most influential factor to effective CBE. Beaulieu's (2006) research found "a strong relationship between the density of the Native student population at a school site and the presence of culturally based education" (p. 57). CBE was greater at schools with higher density of Native students. As McCarty (2011) points out, "In both Demmert's and Beaulieu's frameworks, the most effective programs identified are those that focus on and systematically incorporate cultural knowledge, resources, and practices present in the local social-linguistic context" (p. 11).

> The extent to which the social linguistic approach of the school mirrors that of the students and community will determine the extent to which the purposes and goals of the school can be accomplished.
> (Beaulieu 2006, p. 52).

Another major finding in Powers' (2006) study was the effect of school climate on the educational outcomes of Native students. The author found that CBE can improve school climate so urban Native students feel less alienated as minorities and regain cultural support. Diversity of tribal cultures and languages can and should impact how CBE plays out in a particular context.

> "Multicultural urban settings are particularly challenging because of the absence of a common cultural standard and the absence of this common influence in the backgrounds and lives of the students… That context is exceedingly important in defining the cultural base with which educational practices are to be focused… In any case, the nature and emphasis on culturally based education is going to be locally defined. It does not come off the shelf, out of a can."
> (Dunlap, Fredericks, & Nelson, 2013, p. 14)

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