

# **Culturally Responsive Education: The Need and Methods for Demonstrating Effectiveness for Evidenced-based Practices**

Adam Thomas Murry

This chapter discusses culturally responsive education from a different perspective than many of my colleagues. Although I teach undergraduate and graduate courses and regularly deliver occupational trainings, I am a researcher more than I am a teacher. In fact, even my courses and trainings are on research methods. However, as an industrial-organizational psychologist, my expertise in research has provided me with a window to see what it takes (research-wise) to convince decision-makers that supporting an endeavor such as culturally responsive education is a good thing. As it currently stands, the smart and creative contributions of teachers throughout Indian Country are stuck in their local contexts, and, unless there is a mentorship plan in place, once a teacher retires whether their impactful practices will continue or not is a matter of chance. This chapter is about using research to establish culturally responsive education as the norm; about accumulating things that work and disregarding things that do not; and ultimately about determining best practices for our Native students so that they can get the most out of their education.

This chapter is broken into two major sections. The first is the history of culturally responsive education and its justification for Native people. The second is a review of the research followed by a set of different research designs teachers and researchers can use to help solidify culturally responsive education as a viable practice. For those who are familiar with its history and justifications, you might want to skip ahead to the research review and designs section. The ultimate goal of this chapter is to be useful for teachers, administrators, undergraduate and graduate students, and researchers who are in charge of program evaluations, grant applications, curriculum development, and other similar endeavors that are in the position to provide evidence that culturally responsive education works, including the if's, but's, and when's it works depending on something else.

## **Background**

When one person teaches another, but both are from the same culture, the education process is culturally responsive automatically and unconsciously. It takes for granted the socialized pedagogies, protocols of interaction, educational priorities, verbal and non-verbal symbols, standards of success, and long-term agendas of their group. In other words, the teacher knows familiar strategies of how to communicate to a learner that she/he should both pay attention to and understand. On the individual level, the match between teacher and student

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personalities would enhance the cultural effect, and even help to compensate for some cultural differences.

By and large, culturally responsive education is a cross-cultural event. The need for a label and method for culturally responsive education is born from the interaction between two cultures, when there is an incentive for individuals of one cultural group to teach individuals from another cultural group and the familiar strategies of learning and teaching are not the same. This need is most salient when the relationship between the two cultural groups has not been congenial. Educational anthropologist John Ogbu (1992) made the important point that adapting to an educational system in another culture (e.g., in the case of international students) can be an acceptable challenge for the student if it means increased social prestige and economic opportunity.

For minorities whose status in society has been defined by a history of subjugation, oppression, and discrimination (e.g., African Americans and Native Americans), Ogbu (1992) argued that success in formal education could be construed as a compromise to one's ethnic identity and actually affect one's ethnic group membership. In other words, if an individual from a marginalized group succeeds in a system of the oppressor, she/he could be perceived as a "sell out" and support that is normally given to a group member (e.g., encouragement) might be withheld. Disincentives for the aspiring individual are compounded if the reward for succeeding by dominant class standards does not even pay off to the same degree as it does for dominant class members (as has been shown to be the case for Blacks and Native Americans in income and employment when matched by education level with Whites; e.g., see DOL, 2012; Ross, et al., 2012). This is relevant to Native American teachers as well, who may share the culture of their students but still work in a system that is imposed by the dominant culture (see Balter & Grossman's (2009) study on Native teachers reflections on the No Child Left Behind Act).

Since Ogbu's critic of multicultural education, the concept of culturally responsive education has developed into something much more than cultural flare. It is about a change in the process of educating that enhances, rather than threatens, their cultural identity. The next step is demonstrating empirically what works and how to apply it.

### **History and Evolution of the Culturally Responsive Education**

The concept of culturally responsive education was born in the socio-political upheavals of the 1960's Civil Rights Movement. Long-time researcher and proponent of culturally responsive education Geneva Gay (1983) explains that civil rights demands for inclusion and accurate representation led to critical research about the theories and content in education. She recalls, "Many educators and social scientists who had endorsed the deprivation theory that undergirded compensatory education in the 1950's began to rethink their premises" (p. 561). Deprivation, or Deficit, Theory states that minorities underperform Whites in school settings because students' home cultures are deprived of or deficient in sufficient stimulation and resources for proper cognitive develop-

ment (e.g., Jensen, 1969; Bloom, Davis, & Hess, 1965). After minorities gained entrance into higher education and research through the Civil Rights Act of 1964, explanations shifted from blaming students and instead questioned the role of the classroom environment (Gay, 1983); such as the effect of preferential teacher behavior on student performance (Rosenthal & Jacobson, 1968; see also a meta-analysis by Südkamp, Kaiser, & Möller, 2012) and content analyses of instructional materials (Roderick, 1970; see also Sleeter, 2011). The creation of ethnic studies courses and new or revised textbooks were significant outcomes of this movement (Banks, 2013).

Overlapping with social justice concerns was a national agenda to accommodate minority students following the 1970 and 1980 Census, that showed minority populations were increasing in their percentage of the total population (Hobbs & Stoops, 2002; Martin, 1997); a trend that continues today (Colby & Ortman, 2015). Research on how to teach a multicultural student population proliferated, but rather than explaining minority underperformance in terms of the students' cultural inferiority, the implicit racism of the teachers, or the systemic racism of the institutions and policies, researchers instead attempted to outline how historically Anglo school culture differed from the cultures of minority students in ways that might affect learning. Research named different culturally-based learning styles (Keefe, 1979; Swisher & Deyhle, 1987), interaction patterns (Greenbaum & Greenbaum, 1983; Phillips, 1976), and dominant brain hemispheres (Paredes & Hepburn, 1976; Ross, 1982) as the potential causes of misfit between educational practices in the United States and ethnic minority students. Yet, a method successful method of teaching that overcame these differences was not prescribed.

In the late 1980's-early 1990's, the research program of Gloria Ladson-Billings (1989; 1990; 1994) investigated the rationales and methods of teachers that were especially effective with African American youth (according to their grades and reports from their parents). Together they distilled the essential components of their approach and coined the term culturally relevant pedagogy (Young, 2010). Rather than define a particular style, she explained that culturally relevant pedagogy rests on three criteria: a) academic success of students, b) development/maintenance of cultural competence, and c) development of a critical consciousness (i.e., understanding how the past influences current conditions) for active citizenship (Ladson-Billings, 1995).

The concept has worked through many titles over the years with different formulations (e.g., multiethnic, multicultural, sociocultural, culturally congruent, culturally sensitive, culturally tailored and culturally relevant), different foci (e.g., curriculum, teaching, pedagogy, schooling, and education), and with different populations (Brown-Jeffery & Copper, 2011; Mohatt & Erickson, 1981; Ladson-Billings, 1995; Nieto, 1999; Villegas & Lucas, 2002). I will be using the prefix "culturally responsive" as I agree with other authors (Castgno & Brayboy, 2008; Gay, 2000) that it best captures the dynamic, or adapting, nature of the student-teacher relationship/instructional approach across cohorts and cultural groups

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according to student need. I will also be referring to education as the foci, since that includes all components of the institutionalized learning process.

Multiple scholars have offered taxonomies to outline the necessary parts of culturally responsive education (e.g., Howard, 2003; Villegas & Lucas, 2002). The most popular are those of University of Washington professors James A. Banks (2007) and Geneva Gay (2000). While they differ on the order and labeling of the components, each advocates, 1) integrating content and designing curriculum that is relevant to minority groups' self-concept and community needs (e.g., accurate histories and current scholarship guided by community values and practical needs); 2) teaching students and teachers about the assumptions and historically embedded nature of knowledge, with comparisons across cultures; 3) utilizing communication, pedagogy, and learning styles from the students' home culture to facilitate learning in the classroom context; and 4) building a safe, non-discriminating learning environment for participation of diverse students and their families. Banks (2007) adds a fifth element regarding the empowerment of a school's overall culture and structure to support classroom activities of this nature. Native American scholars add the inclusion of family, community members, and Native languages for Native learners (Castagno & Brayboy, 2008; Demmert & Towner, 2003; Hermes, 2007).

### **Culturally Responsive Education for Native Americans**

The arguments for culturally responsive education for Natives Americans generally fall into one of four interrelated categories: 1) tribal diversity, 2) self-determination, 3) remediation for past injustices, and 4) addressing the achievement gap. It should be noted that although my focus in this chapter is on Native Americans, similar arguments, research, and educational reform is taking place for Indigenous students in other nations, such as Canada's First Nations (e.g., Agbo, 2004; Maina, 1997), New Zealand's Māori (e.g., Averill et al., 2009; Savage et al., 2011), and Australia's Aborigines (e.g., Hickling-Hudson, 2005; Santoro, 2007).

**Tribal diversity.** According to the 2014 American Community Survey, between .82% - 1.7% of the 319 million citizens of the United States report being Native American (i.e., between 2.6 - 5.4 million depending on whether mixed or multi-racial Natives are included for the higher estimate; see table B02003 of the American Community Survey 2014 one year results ). The label "Native American" refers to an ethnic category of people whose ancestors are indigenous to the United States. It is often used interchangeably with "American Indian" or "Indian" and placed alongside Alaskan Natives (e.g., AI/AN, see U.S. Census).

The singular demographic category for Native Americans as an ethnic group should not imply uniformity in ethnicity or culture. On the contrary, Native Americans differ by tribe(s) as well as the degree to which one identifies with their heritage. As of 2014, there are 566 federally recognized tribes (about 229 are Alaskan Native; BIA, 2014) with an estimated 169 Native languages still in use to some extent (Siebens & Julian, 2011). Federally recognized tribes are, "Any AI/AN, Band, Nation, Pueblo, or other organized group or community,

including any Alaska Native village... acknowledged by the federal government to constitute a tribe with a government-to-government relationship with the United States” (US Census, 2008, p.2). Culturally speaking, while tribes that share linguistic roots and geographic, or ecological, zones tend to have much in common, even among these there is significant between-group as well as within-group variation (Waldman, 2009). For instance, in Nagel’s (1994) discussion of socially constructed identity, she mentions that Native American identity has multiple layers, including:

Subtribal (clan, lineage, traditional), tribal (ethnographic or linguistic, reservation-based, official), regional (Oklahoma, California, Alaska, Plains), supra-tribal or pan-Indian (Native American, Indian, American Indian). Which of these identities a native individual employs in social interaction depends partly on where and with whom the interaction occurs. Thus, an American Indian might be a “mixed-blood” on a reservation, from “Pine Ridge” when speaking to someone from another reservation, a “Sioux” or “Lakota” when responding to the U.S. Census, and “Native American” when interacting with non-Indians. (p.155)

Moreover, individuals can vary on how much they identify with and embody their Native-ness (James, 2006). Very much due to the experience of colonization and policies directed at assimilating Native Americans into American society (described in the next sections), Native identity has been described in terms of a continuum between remaining fully traditional to being fully acculturated to American society. In an early study on the Menominee reservation about adaptation to culture change, Spindler and Spindler (1958) identified five different groups representing increasing levels of acculturation to American (“Western”) values: Native-oriented (i.e., traditional), peyote cult (i.e., Western institutions subsumed into Native context), transitional, and acculturated (broken into lower status-acculturated and elite-acculturated). La Frombroise, Trimble, and Mohatt (1990), describing a model of Native cultural identity used for clinical purposes listed the aforementioned traditional-transitional-assimilated sequence, but also distinguished categories for bicultural (equal membership/functioning in both traditional and dominant cultural settings) and marginal (neither acceptance/functioning in either cultural setting) identities. Oetting (1990-1991) created the Orthogonal Cultural Identity scale to work with multicultural or mixed-blood individuals and demonstrated empirically that individuals can endorse more than one cultural orientation at the same time.

The diversity of Native identity on both group and individual levels signals the importance of culturally responsive education within as well as for Native communities. As it can be seen in the discussion above a one-size-fits-all method of instruction could be too broad even if that method were narrowed down exclusively for “Native Americans.” The homogeneity (“sameness”) and/or heterogeneity (“differentness”) of the audience could make more tailored or more general approaches more or less appropriate.

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**Self-determination:** It is important to remember that Native tribes have been recognized as sovereign nations since the foundation of the United States (e.g., the Treaty of Fort Pitt, 1778). In fact, the land claims of the U.S. government only have legitimacy if we accept the nation-to-nation relationship with tribes who ceded their lands through treaty negotiations. Despite their sovereignty, policies made on behalf of Native Americans vacillate on whether to acknowledge their freedom or regulate their lives. For example, the Dawes Act of 1887 (also referred to as the General Allotment Act) divided up tribal territory into individual family plots. The goal was to wean Natives away from communal living and teach them the value of individual property ownership. Native lands that fell outside of the determined need for individual allotments was deemed surplus and sold (Rollings, 2004). After respectable Native service in WWI this act was overwritten by the Indian Reorganization Act of 1934, which put a halt to the allotment process and returned portions of seized “surplus” land. Around 20 years later, Native land trusts were dissolved altogether for over a hundred tribes with the Termination Act of 1953 (public law 588; Walch, 1983) and those remaining on reservations were given incentives to leave with the promise of work with the Indian Relocation Act of 1956 (public law 959). Another example is the Indian Citizenship Act of 1924. Prior to the act, citizenship was only awarded to Natives on a negotiated basis (e.g., by trading land, renouncing tribal citizenship, or joining the military). Following the act all Natives born within the U.S. were considered citizens; however, citizenship did not include at that time the right to vote (Houghton, 1931) or freedom of religion (see American Indian Religious Freedom Act, 1978).

Following the Civil Rights Movement, legislation changed for Native Americans. President Nixon retracted the termination policies of the 1950’s and argued that tribes be allowed to control their own affairs while still being eligible for Federal assistance. The Self-Determination and Educational Assistance Act of 1975 (public law 93-638) made it possible for Native organizations to apply for grants and contract services otherwise assumed exclusively by the government with regard to health, public safety, environmental management, and education, among others. It has been argued by Native and non-Native authors (Brayboy & Castagno, 2009; Deyhle & Swisher, 1997; Lomawaima & McCarty, 2002) that culturally responsive education is a manifestation of self-determination in that it gives Native communities input and control over what and how education will be implemented.

**Remediation:** To understand the significance of culturally responsive approaches for Native Americans, it is necessary to situate the practice within the larger historical context. Prior to the arrival of Spanish, Dutch, English, and other European colonists, education was a semi-formal, intergenerational, and community endeavor, where information was transmitted in various forms (e.g., stories, songs, rituals, and mentorship) for the sake of survival and symbiotic co-existence with the local ecology and other tribes (Cajete, 1994; Berkes, Colding & Folke, 2000). Not long after the arrival of explorers and colonialists, education was usurped first by the missionaries (as early as 1568) and later by the U.S.



government's boarding and public schools (Berry, 1968; DeJong, 1993). The history is long and complex and beyond the scope of this review, however, the overriding theme is that rather than provide a means of participating in the U.S. economy, "Indian education" became an avenue to Christianize and civilize the Indigenous population by overwriting Native culture (Berry, 1968; Deyhle & Swisher, 1997; Lomawaima, 1999; Reyhner, 1993; Szasz, 1983). Methods of "education" included mandates for children to leave their families for school, assignment of new Euro-American names, cutting students' hair, requiring uniforms, punishment for use of one's tribal language, frequent corporal punishment and manual labor, and regular "outings" (i.e., vacations spent in devout Christian homes); all to better interrupt the transference of Native culture and prepare students for low-end jobs (Berry, 1968; DeJong, 1993; Deyhle & Swisher, 1997; Reyhner, 1997; Trennert, 1982, Ziibiwing Center, 2011).

In 1924, the Indian Citizenship Act helped raise attention to Native issues in Congress and the American public, helping lead to the study *The Problem of Indian Administration*, otherwise known as the Meriam report after its lead author Lewis Meriam. This study heavily criticized Indian education programs for their lack of adequate funding, which resulted in sub-standard teachers, negative assessments of student learning, child labor for school upkeep (sometimes consuming up to half of a student's day), overcrowding, the spread of preventable disease, poor nutrition, and unsanitary housing and bathroom facilities (Meriam, 1928). Among other things, the Meriam report recommended that, "The effort to substitute educational leadership for the more dictatorial methods now used in some places will necessitate more understanding of and sympathy for the Indian point of view. Leadership will recognize the good in the economic and social life of the Indians in their religion and ethics, and will seek to develop it and build on it rather than to crush out all that is Indian" (p. 23).

Forty years later Indian education was criticized again, this time with a focus on educational outcomes. Senator Robert Kennedy reviewed a range of indicators collected by that time (e.g., percentage of population in school, dropout rates, level of education, income, and self-efficacy in school) and concluded that the nation had failed to keep its commitments to the tribes as Natives maintained the worst statistics of any other group (see also the Havighurst Report, 1970). The 1969 "Kennedy Report," *Indian Education: A National Tragedy – A National Challenge*, made recommendations, among others related to health and administration, for the development of bi-cultural or "culturally sensitive" materials for education (p. 116-117, 121-122). The report led to the Indian Education Act of 1972, which provided funds to public schools with Native students, recognizing "that American Indians have unique, educational and culturally related academic needs" (OESE, 2005). The importance of this mission was reaffirmed with amendments and continued funding in 1994 (public law 103-382), 1998 (executive order 13096), 2001 (public law 107-110), 2004 (executive order 13336), and 2011 (executive order 13592).

Unfortunately, despite national attention Natives still have some of the worst educational and employment outcomes of any other American minority

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(NIEA, n.d.; OCR, 2012; Robers, Kemp, & Truman, 2013; Ross et al., 2012) and culturally responsive designs have yet to become the norm. To make matters worse, the stigma around education continues to be perpetuated with recent examples, such as the largest settlement case to date from the Roman Catholic church, paid to past students of Native boarding schools throughout the Pacific Northwest for almost ubiquitous physical and sexual abuses (Yardley, 2011), and the recently uncovered experiments in starvation in First Nations boarding schools in Canada (Mosby, 2013). While the past cannot be re-written, culturally responsive education does offer an opportunity to heed mandates and recommendations and change impressions in the future.

**Achievement gap:** A third rationale for utilizing culturally responsive approaches with Native students has come from arguments that such designs will help close the persistent achievement gap in education and employment (see Steeves et al., this volume). Native students are more likely to be eligible for special education, attend schools with lower average yearly progress or academic counseling, and less likely to score as college-ready on high school assessments, graduate with a degree, or earn a comparable income to Whites, even when working in similar fields (e.g., in science, technology, engineering, and math) with similar education (NIEA, n.d.; Ross et al., 2012). Scholars in psychology, education, educational anthropology, and related topics have proposed that, in addition to environmental factors such as poverty and lack of infrastructure (see James, 2000), educational disparities are the result of cultural differences between student home and school cultures.

The proposition has been named “Cultural Difference Theory” and grew to replace the cultural deficit and deprivation theories of the 1950’s and 1960’s (Banks, 2013). Although there are different ways to divide the cultural differences literature comparing Native Americans and mainstream schooling, arguments generally fall into the realms of epistemologies, learning styles, and etiquette, or how Natives think, learn and act.

*Epistemologies.* Epistemology refers to the methods and limits of creating knowledge, or how we know what we say we know. Much of the work comparing Natives and mainstream epistemologies has been done within the science education (Aikenhead & Ogawa, 2007; Allen & Crawley, 1998; Barnhardt & Kawagley, 2005), environmental science (Berkes, Colding, & Folke, 2000; Cajete, 2000; Kawagley & Barnhardt, 1998; Tsuji & Ho, 2002), and sustainability science literature (Battiste, 2002; Chambers & Gillepsie, 2000; Murry, James, & Drown, 2013). For example, Aikenhead and Ogawa (2007) articulated that scientific knowledge is founded upon beliefs that nature is knowable through data, universal truth is possible, parts can be summed to understand the whole, data comes through measurement, and reality and perceptions of reality are distinct. As a consequence, methods of discovering knowledge can be applied to any and all experiential domains, follow a linear progression, and include reductionism, quantification, replication, and generalizability within the contexts of funded pathways and societal interests. In a traditional indigenous sense, or what Aikenhead and Ogawa (2007) refer to as “Indigenous Ways of Living with



Nature,” knowledge is based on beliefs that nature is knowable through relationship, truth is place-based and changing, the whole is different than its parts, data comes from experience and reflection, and our perceptions are part of reality. Consequently, methods for discovering knowledge are based on firsthand experience, changing iteratively to adapt to new environments, circularity in time and being, holistic and inter-generational observation, and a tolerance for mystery or multidimensional intersecting influences. It is argued that culturally responsive approaches should provide an avenue to work with, rather than against, such differences (Allen & Crawley, 1998).

*Learning styles.* Learning style has been defined as mental (i.e., cognitive), emotional (i.e., affective), and physiological preferences that influence how learners perceive, interact with, and respond to the learning environment (Swanson, 1995; Keefe, 1979). Researchers have debated the utility of building instructional methods around particular learning styles because there is so much variation within a group, and have since argued for simply more variety in learning environments (Dunn, Beaudy, & Klavas, 2002; Pashler, McDaniel, Rohrer, & Bjork, 2008). Nevertheless, the sheer amount of research on Native American learning styles make them worth considering with regard to the value of culturally responsive approaches (Berry, 1966, 1969, 1971; More, 1987; Kleinfeld & Nelson, 1988).

Hilberg and Tharp (2002) reviewed the empirical literature to conclude that higher percentages of Native American learners are global (holistic) thinkers, visually oriented, reflective, and collaborative compared to their White peers who fall on opposite ends of those continuums. Global, or holistic, thinkers prefer to consider pieces of information simultaneously through first hearing broad overviews and context to conceptualize a problem. This is contrasted with sequential thinkers who prefer more linear, piecemeal sets of information. Visually-oriented thinking as a term is self-explanatory in that it describes a benefit from visual aids to process information (versus text only). Reflective thinkers tend to consider an issue before acting (versus trial-and-error), and collaborators are more likely to prefer group work, shared goals, responsibilities, and shared rewards (versus competitive orientations; see also a review by Pewewardy, 2002). The incorporation of lesson plans that provide overviews and metaphors to give learning purpose, group work and visual materials, and sufficient time to process before acting should all be included in a culturally responsive design for Native Americans.

*Etiquette (communication norms).* The potential for miscommunication between Native students and Anglo teachers was identified in the dissertation work of Susan Urmston Phillips (1972) on the Warm Spring reservation in Central Oregon. Over the course of her research, she documented how communication in the home and in cultural life was very different than in the classroom (Phillips, 1976). Native communication tended to involve less talking, slower and softer speech, more listening, showing attention inadvertently (less gazing), requiring attention subtly (i.e., less eye contact), surround a physical activity, and use less body language. In addition, there are rules of etiquette for youth when speaking

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to each other that differs when speaking to adults. That style of communication was contrasted with that expected in the typical classroom, which is much more verbose, boisterous, competitive, sedentary, and demanding of attention. Similar results were found amongst the Apache in the Southwest (Ingalls & Hammond, 2007). Pueblo author and scholar Greg Cajete (1999) argues that communication and behavioral norms like the ones documented by Phillips are often wrongly labeled by teachers as defiance, laziness, or a lack of engagement or ability. Culturally responsive designs should help to address these types of miscommunications and the consequences to students given the prescription for cultural competence on behalf of the instructors.

### **Review of the Research**

As should be evident from the above review, culturally responsive education has become more than a philosophical fad. For Native Americans in particular and minorities in general, culturally responsive education has become an agenda that binds together education with history, politics, identity, science, and ethics. At this point the push for culturally responsive education is going to continue with or without the research to back it up. However, to the extent that research can help to convince policy-makers, solicit grant funding, and establish best practices, it is worthwhile to ask, “According to the research, does it work better than traditional mainstream education?”

**Early research (1971-2003):** Research on how to improve the education of Native Americans blossomed in the 1970’s following supportive legislation, continued into the 1980’s, and grew substantially in the 1990’s. In 1998, President Clinton’s Executive Order on AI/AN education (#13096) requested an evaluation of the effective strategies and promising approaches to closing the achievement gap, especially those that involved native languages and cultures (Clinton, 1998, p. 42682). As part of that research request, over 100 articles, books, dissertations, and these were exhaustively reviewed and annotated by Tlinget/Lakota scholar William G. Demmert Jr. for Washington D.C.’s Office of Educational Research and Improvement (Demmert, 2001) and Portland’s Northwest Regional Education Lab (Demmert & Towner, 2003). Since Demmert’s reports have yet to be rivaled in their treatment of the literature and have become reference texts for researchers on culturally responsive education for Native students, I chose the date of the later report as the cut-off for the early period of research.

Together Demmert’s 2001 and 2003 reports provide the most supportive and the most damaging evidence for culturally responsive education. Initially, Demmert (2001) concluded that, “a series of studies in the past 30 years collectively provides strong evidence that native language and cultural programs – and student identification with such programs – are associated with improved academic performance, decreased dropout rates, improved school attendance rates, decreased clinical symptoms, and improved personal behavior” (p. 17). Further, Demmert, McCardle, Mele-McCarthy, and Leos (2006) wrote that Demmert’s (2001) report described, “Information on teachers, instruction, and curriculum [that] tells us that teachers competent in their subject areas, given a variety of

instructional approaches and a challenging, culturally-based curriculum, can motivate students to do well in school” (p. 94).

Such conclusions must be tempered however as Demmert (2001) admittedly did not assess the quality of the research for his exhaustive review (p. iv). Two years later, Demmert and Towner (2003) revisited the same literature with a more critical eye toward methodology. This time, studies were screened by two criteria: They had to use a) culturally responsive interventions and b) experimental or quasi-experimental designs. Demmert and Towner (2003) delineated that to be considered “culturally responsive,” six components needed to be present in some degree: 1) recognition and use of Native languages, 2) pedagogy that stresses traditional cultural characteristics, 3) pedagogy that uses teaching strategies that are congruent with traditional culture, 4) curriculum based on traditional culture and recognizes the importance of Native spirituality, 5) strong Native community participation, and 6) knowledge and use of the socio-political norms of the community (p. 9-10). Experimental designs were those characterized by questions of causation, included random assignment, and control groups. Quasi-experimental designs were evaluations that were, for whatever reason, unable to randomize assignment into treatment or control groups.

Of the over 100 studies reviewed by Demmert (2001), Demmert and Towner (2003) found that, “nearly all of the research consisted of qualitative case studies and simple descriptions. Of all the studies reviewed, only six studies targeting culturally based education could be considered experimental or quasi-experimental, and only one speaks directly to the culturally based education/academic achievement link ... Obviously, there is a strong need to design and implement research studies that will yield valid and reliable information” (p. 7). The one study they identified, by Tharp (1982), was an extensively implemented Kamehameha Early Education Program (KEEP) in Hawaii, which admittedly was an evaluation of a teaching method that focused on comprehension rather than phonics, of which culturally compatibility was only one component (p. 523). Demmert and Towner (2003) ended with four basic research prescriptions to improve research in this area:

1. Carefully define the culturally-based education intervention,
2. Target student learning as an outcome,
3. Include estimates of effect size, and
4. Design research with an adequate comparative base.

**Current research (2003-2016):** Thirteen years have gone by since Demmert and Towner’s (2003) recommendations. Publications since that time have been numerous, but still not heeding to the standards of empirical rigor requested in their report. I searched a series of electronic databases available through my university (e.g., PsycINFO; Google Scholar) with the terms “Native American,” “American Indian,” “Alaskan Native,” “Indigenous,” “culturally-responsive,” “-congruent,” “-tailored,” “-sensitive,” or “-based;” “education,” “curriculum,” “schooling,” “teaching,” or “pedagogy.” I focused on peer-reviewed journal

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articles since that is the accepted medium of scientific discourse and the source of information for any student or scholar in search for evidence.

In my search I recovered six articles that evaluated culturally responsive approaches that focused on Native student achievement (Bang & Medin, 2010; Hermes, 2007; Hickling-Hudson & Ahlquist, 2003; Lipka & Adams, 2004; McCarty & Lee, 2014; Powers, Pothoff, Bearinger, & Resnick, 2003) which offer some support. Of these six articles, only two used quasi-experimental designs that included controls groups, and only one of which incorporated random assignment. Lipka and Adams (2004) randomly assigned teachers who were trained in either standard or culturally responsive curriculum to 15 classrooms. Their study showed convincingly that receiving culturally responsive education predicted a significant improvement on math test scores over the course of a semester above the standard curriculum. Powers et al. (2003) compared Native students in public schools with Native students enrolled in a culturally-based program called the Indian Youth Resiliency Impact Study. After controlling for other variables in a structural equation model, they showed that culturally responsive education works through its influence on parent involvement and school climate, while the cultural program itself had negligible direct effects on educational outcomes.

Two studies used comparative designs, but were not quasi-experimental in that there was either no control group or no assignment (random or otherwise) into treatment or control conditions. In an innovative mixed-method, pre-test/post-test design, Bang and Medin (2010) coded and compared pre- and post-science camp interviews using paired-sample t-tests. They reported increased student perceptions of the Native community as a space to learn science, that Natives do science as well as non-Natives, and in knowledge of plant properties and causal chains within the environment. However, there was no control group or random assignment and the coding process was not described in sufficient enough detail to replicate the analysis or ascertain exactly what change meant beyond their claims.

Hickling-Hudson and Ahlquist (2003) conducted a comparative case study of two schools in the U.S. and two schools in Australia, one each that was culturally responsive. In their comparison, one of the culturally responsive schools (in Australia) had strong tests scores. Comparative case studies are interesting, however it is impossible to know whether or not the strong test scores of the one school was due to culturally responsive education or something else (e.g., school climate) due to the retrospective selection process of the schools that were compared, the lack of a manipulated “treatment,” and no assessment of change following the introduction of culturally responsive curriculum.

Finally, two studies claimed benefits of culturally responsive education but did not employ comparative designs or provide evaluative data. McCarty and Lee (2014) used an ethnographic approach to describe two schools, the Native American Community Academy (NACA) and the trilingual charter Puente de Hózhó. McCarty and Lee mention that student achievement at NACA has improved since its inception in 2006, citing unpublished documents, but it is unclear whether these improvements are due to the school’s maturation or due specifically

to their culturally-embedded curriculum. At Puente de Hózhó, Native students outperform Native students in the general public schools in both English and Math, but without quasi-experimental designs it is impossible to know whether or not these differences are the result of factors other than language programs (e.g., teacher commitment, organizational support). Hermes (2007), describing tribal schools that were implementing cultural responsiveness exclusively through language immersion, admits that there is no data as of yet, but argues that the fact that their language program exists, has high parent involvement, and students report high motivation should be considered preliminary evidence supporting the program.

To be clear, all of the schools and programs described in these studies are doing good work and should be acknowledged for their creativity and contribution to Native student progress, tribal sovereignty, and cultural revitalization. From a policy and research standpoint however the available literature still lacks in both quantity and quality.

### **Moving Forward – Seven Designs of Incremental Rigor**

The research literature that supports culturally responsive education has improved since the earlier era, but it still has a long way to go. In thirteen years only one study (Lipka & Adams, 2004) used a compelling experimental design. While the theory, the reviews, case studies, and reflections for culturally responsive approaches are plentiful and useful for generating hypotheses, they do not in and of themselves demonstrate the effectiveness of culturally responsive programs. To honor the good work that our teachers are doing, we need more evaluations that can clearly and unequivocally establish their culturally responsive instructional methods as the causes for students' improved achievement. Below I briefly review seven different types of evaluation designs, noting their strengths and weaknesses in establishing cause and effect. It is my hope that these figures and descriptions will serve as a resource for those who are in the position to evaluate culturally responsive programs. But first, some essential concepts...

**Some essential concepts:** In an article on training evaluations in the organizational literature, Sackett and Mullen (1993) argue that the level of rigor required by an evaluation should be matched with what the evaluator (and organization hiring her/him) needs from the assessment. While they acknowledge that the full fledged experiment is the gold standard (i.e., random selection, random assignment, control groups), they point out that the experiment is often too expensive or simply not feasible given the amount of control one has over the situation (e.g., even if you can randomly assign students into one or another classroom, it is not likely that you will be able to randomly select students from the total population of students). That said, just because a full experimental design may not be feasible, there are still decisions that make an evaluation's conclusions more or less compelling. Before I get into the specifics, there are a few concepts that need to be understood to situate the value of the designs discussed below.

**A word on causation:** Cause and effect is a deceptively simple thing. History is littered with disregarded beliefs about causes and effects that were at one time

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propagated in society (Webster, 2008), and I know that in my own life I have attempted to resolve problems with strategies that failed to achieve the effect I desired, no doubt due to a misunderstanding as to where or how to intervene to interrupt the cause and effect cycle. As it turns out, it is not enough to listen to this or that advice that, “if we only do this, then that will happen,” as we are all subject to mistakes, misperceptions, biases, and over-simplified understandings.

In the scientific community, before we can claim that one thing causes another, we have to establish three things (Cook & Campbell, 1979). First, the cause has to happen before the effect (i.e., temporal precedence). Unfortunately, the old playground song, “First comes love, then comes marriage, then comes baby in a baby carriage” does not qualify. It turns out that the outcome does not require the first two ingredients. Second, the thing that we believe to be the cause has to co-occur with the effect (i.e., covariation). Although the rooster crowing comes before the sun-rise, even if we eat the rooster the sun still comes up. Thirdly, alternative explanations have to be cancelled out. While it may be true that shoe size and intelligence are correlated in children, it is probably the maturity of the child rather than the size of the sneaker that is driving the change.

These three principles for attributing cause and effect are important as they will come up in our discussion of research designs. Although we know most of these principles from experience, we often do not apply them to evaluations of our programs. More will be said about these under the “weaknesses” sections of several of the designs.

**A word on randomization:** When it comes to fair outcomes, there is a degree of certainty when it comes to chance. Flipping a coin should, over time, give us an equal amount of heads and tails (i.e., 50% each). In my discussion of three of the seven designs, the idea of random selection or random assignment will be mentioned. The reason why this is important is because we are all different and similar in many ways. While it may be possible to assign two groups with 50% males and 50% females, it may not be as easy to assign two groups with an equal amount of extroverts and introverts, conservatives and liberals, high in cognitive ability and low, rude and considerate, and on and on. You never know, maybe your program works best for introverted, conservative, low cognitive ability, considerate, older, males, who are highly educated, rich, married, and live in urban areas. Randomization, which is a fancy word for everyone gets an equal chance to receive your new and improved program versus the old and regular program, is our tool for assigning people from every continuum imaginable equally into however many groups we have created to compare. In theory, over time and with larger numbers, random assignment should (as a flip of the coin predicts) give us an equal amount of every combination of people.

Not only does randomization provide us with the theoretical confidence that individuals will be assigned fairly and equally, it also helps us to prevent “self-selection bias.” Self-selection bias occurs when the type of people who would volunteer for your program represent a group that is different or unique compared to everyone you would hope to recruit to your program. For instance, if a magnet program offers more resources (e.g., computers, field trips, laborato-



ries, and libraries) and better learning environments (e.g., larger spaces, smaller teacher to student ratios, and air-conditioning or heating), and students' parents are responsible for enrollment, it is possible that only students whose parents are involved school affairs, who read school announcements, and have the time to participate in parent-teacher associations will enroll their children. At the end of the school year, when assessments are due, it is possible that the magnet program's resources are responsible for the higher scores of their students; however it is also possible, indeed highly probable, that differences between magnet school scores and regular school scores are due to the fact that only students whose parents are highly involved in their education were enrolled. This is tied to the third criteria listed above regarding a design's ability to cancel out alternative explanations.

There is a second kind of randomization: random selection. While I might take a group of students and randomly assign them into one group or another, the initial pool of students may not be representative of the general population. For example, if I randomly assigned athletes to a specialized exercise program or a specialized nutrition program, I would still not be able to make conclusion about how these programs would work for the general population, since I started with only athletes. It is possible that they are different and unique in ways that would affect the conclusions I could draw from the effectiveness of my program.

**A word on pre-tests:** Despite the theoretical assumption that randomization gives us equal groups to compare without self-selection bias, sometimes random chance fails us; sometimes flipping a coin results in more heads than tails and sometimes random number generators in Microsoft Excel gives us more odd numbers than even numbers. To check and control for differences in our comparison groups, and even if it is not feasible to randomly assign people into groups, pre-tests can help equalize groups that are different. Pre-tests can include demographic assessments (e.g., gender, motivation, self-efficacy, parental involvement) and they can include knowledge and skill assessments (e.g., final exams delivered at the beginning of the semester). If you cannot randomly assign students to different groups (new culturally responsive program versus old regular program) or if random assignment fails, analyses such as multiple regression and ANCOVA (analysis of covariance) can still assess the effect of your program holding unexpected differences constant if you take the time to measure them. In other words, you can check the effect of your program after removing the effect of individual differences.

Pre-tests are most often used to assess change. If you give an history test at the beginning of your history class and then give the same test after your class, there are ways to analyze whether a student did better or worse than their initial score (i.e., pair-sample t-tests, repeated measures/within-subjects ANOVA's, multi-level modeling regression with nesting within individual). This is especially useful if your sample sizes are small, since the power to find an effect is stronger in paired-samples (where a person essentially serves as the control group for themselves). Also, if one group starts off in a lower position than the other, sometimes it is better to compare rates of change rather than to compare groups.

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**A word on control groups.** Control groups are essential to experimental and quasi-experimental designs. You basically give your “treatment” to one group and withhold it from your “control” group, with the expectation (or hypothesis) that your treatment group will out-perform the control group. The treatment could be anything you want to evaluate the effect of, in our case it would be culturally responsive education. In health research the treatment group is usually given a new medication, while the control group is given the currently prescribed medication. Sometimes there are multiple control groups. For instance, one group will get the new treatment, one group will receive the currently prescribed treatment, and one group will receive no treatment, with the expectation that both groups that receive treatment will do better than those who receive no treatment, but that the group that received the new treatment will do better than the group that receives the regular old treatment.

In the language of culturally responsive education, the logic of control groups is that we have to assume that students will learn something from the education process. What we want to conclude is that students will learn more in a culturally responsive context than they would in a non-culturally responsive context. If students learn in our culturally responsive classrooms, that’s good, but it is altogether different than saying they learned more than they would without the cultural responsiveness. Control groups give us the ability to say whether or not our definitions and/or implementations of cultural responsiveness out-performed the standard curriculum. This could also be a way to assess how much cultural responsiveness is necessary, if each treatment group included more and more cultural responsiveness.

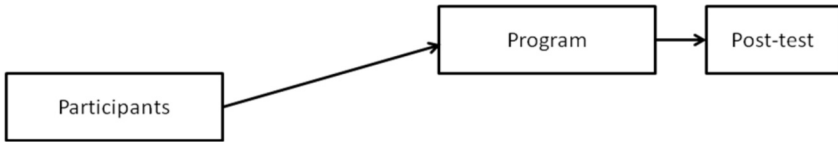
### **The Seven Designs of Incremental Rigor**

Below are seven designs for program evaluation, listed in order of their ability to make claims about a program’s effectiveness. I have labeled this section “the seven designs of incremental rigor,” but as I alluded to earlier, rigor is defined by the exacted level of design necessary to achieve a certain set of conclusions, which may differ according to organizational need (see Sackett & Mullen, 1993). Therefore, the order that I list these designs in is reflective of their increasing ability to establish cause and effect and cancel out alternative explanations (e.g., designs 1-2 are simple designs, 3-6 are quasi-experimental designs, and 7 is an experimental design), but also of my own agenda to make claims about a program rather than some other agenda (e.g., assessing proficiency). Under each definition and figure I note the strengths and weaknesses of each design given the context of establishing culturally responsive education practices for Native students as a better method of instruction than current mainstream educational practices. Whether or not a particular design is necessary will depend on the needs of the evaluator, or the tribe, organization, or funding agency that hired them.

**1. Post-test only, no control group:** A post-test only design with no control group is the simplest design available. It consists of recruiting participants for a program or being given a group of students, exposing them to ideas and activi-

ties designed to impart knowledge and skills, and then evaluating them on those knowledge and skills through some assessment (see figure 1).

**Figure 1. Post-test only design with no control group**



**Strengths:** The strength of this design is that it is easier and generally less expensive than other designs, and that it is adequate for assessing proficiency. With regard to its adequacy for assessing proficiency, it is not always necessary to make the claim that the program is what caused a participants' level of proficiency. For example, for a little over ten years I worked as a preloader or sorter at UPS. Due to the physical nature of the job, we were regularly trained and tested on our safety knowledge. After each training program, there was a test regarding our knowledge of safe practices. More important than where we learned them was whether we knew safe working behaviors. In this case, a post-test only design with no control group was sufficient since whether we knew safe practices from on-the-job training, other employees, previous trainings, or that specific training was not the point. The company was going to offer these trainings regularly as part of part of their due diligence and assess employee knowledge of its content. Since a post-test only design without a control group was sufficient for the organization's needs, a more complex design was not necessary. This type of assessment might be sufficient for U.S. education in general, but for those of us arguing for a different method, it is not sufficient.

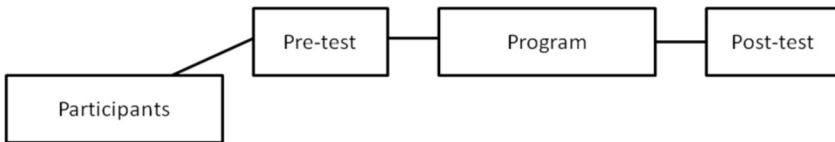
**Weakness:** As I mentioned in the strengths, a weakness of this design is that little to no claims about the specific program's ability to impart knowledge and/or skills can be made. While assessments can make claims about participants passing/not passing, it is not possible to cancel out the possibility that a different program, or no program at all (e.g., as in the case of peer mentoring), would be equally effective in imparting knowledge, skills, or motivation. With this design, it is also not possible to assess whether or not those who entered the program with some or no knowledge increased their knowledge due to the program, if results are due to the type of people who participated in the program, or if results are applicable to anyone else. In a culturally responsive education context, a post-test only design with no control group could tell us that a group of students met some criteria for passing/not passing, but not whether or not those same rates would have occurred in another program, if those students improved because of the program, if success was a product of the type of students who happen to be in the program, or if this program would work for others.

**2. Pre-test and post-test with no control group:** A pre-test/post-test design with no control is referred to as a paired-sample, repeated measures, or within-subjects design, since individuals are essentially compared to themselves at an

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earlier point in time. It consists of recruiting a set of participants or being given a group of students, assessing them on variables of interest, exposing them to ideas and activities meant to impart knowledge and skills or motivation (e.g., the culturally responsive program), and then assessing them again on variables that would be expected to increase or decrease as part of exposure to those ideas and activities (i.e., the program; see figure 2).

**Figure 2. Pre-test and post-test design with no control group**



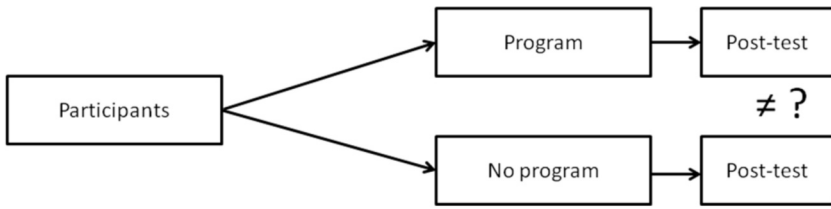
**Strengths:** In addition to the ability of design #1 to assess proficiency given some cut-off, the pre-test and post-test design without a control group can assess change in knowledge, skill, and motivation beyond chance (typical critical alpha = 5% or  $p < .05$ ). Although figure 2 only depicts one pre-test occasion, assessments can be collected at multiple time points during (especially valuable for long-lasting programs) and after the program to evaluate the impact of the program in the long-term. In addition, if demographic variables (e.g., gender, age) are measured during the pretest, differential change based on individual characteristics can be assessed (sometimes the program works better from some folks more than others).

**Weakness:** The largest criticism of this design is that even if change does occur pre- to post program on some variable of interest (e.g., achievement, motivation), it cannot be claimed that the same amount of change wouldn't occur in another program, or no program (e.g., maturation), due to the lack of a control group. In addition, since random selection or random assignment was not used, we cannot say with confidence that the results are not a product of the unique group of participants who happened to make it into our program.

### **3. Post-test only with a control group but without random assignment:**

In a post-test only design with a control group without random assignment to one group or another, participants who are in one group (e.g., culturally responsive school) are usually compared to another (e.g., non-culturally responsive school) on an outcome (e.g., national assessment scores; see figure 3). Participants for each group are recruited or present for some other compulsory or happenstance process. Comparisons test whether or not the two groups (e.g., schools) are significantly different from one another more than we would expect from random chance (typical critical alpha = 5% or  $p < .05$ ).

**Figure 3. Post-test only design with control group but no random assignment**

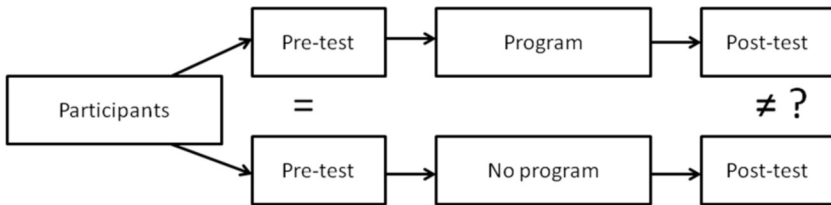


Strengths: In addition to the earlier listed designs' ability to assess whether or not participants met a given cut-off (design #1), the control group(s) makes it possible to evaluate whether or not the program outperforms a standard curriculum, or medicine, or program, or nothing at all (e.g., participants on waitlist).

Weakness: This design is not able to assess change, control statistically for group differences, cancel out the possibility for self-selection bias, or assert that the results should apply to people in general.

**4. Pre-test and post-test with a control group but no random assignment:** In the pre-test and post-test design that includes a control group without random assignment, participants are recruited or present for some compulsory or happenstance process. Individuals of each group are given a pre-program assessment of demographic, knowledge, skill, or motivation, exposed to ideas and/or activities meant to influence outcomes, and then tested again on the same knowledge, skills, or motivations.

**Figure 4. Pre-test and post-test design with a control group but no random assignment**



Strengths: The addition of a pre-test to this control group design allows us 1) evaluate and statistically control for measured differences between our comparison groups, 2) evaluate participants according to some cut-off (similar to design #1), 3) assess change pre- to post-program (similar to but beyond design #2), and 4) compare whether or not the program outperformed an alternative (e.g., standard curriculum or no curriculum at all; similar to design #3). This is a relatively strong quasi-experimental design.

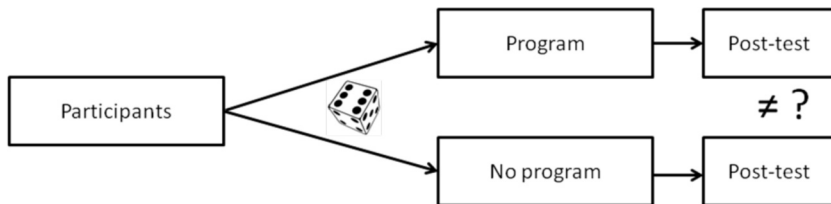
Weakness: Although we can assess equivalence and control statistically for differences in program and no program groups (on things measured on the pre-

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test), this design does not cancel out the alternative explanation that our initial group of participants were not different or unique from the general population or that program-participants were not biased in their self-selection.

**5. Post-test only with a control group and random assignment:** In the post-test only design with a control group and random assignment, one would start with a group of would-be participants (e.g., students) who they would randomly assign to either a treatment group (e.g., culturally responsive program) or control group (e.g., either a standard education program or no education program or both). After the program delivered the ideas and activities meant to impart knowledge, skills, and/or motivation, a test would be administered to assess outcomes of interest (i.e., knowledge, skills, and/or motivation). Groups would be compared statistically to evaluate whether they performed the same or, if one out-performed the other, in which direction.

**Figure 5. Post-test only design with control group and random assignment**



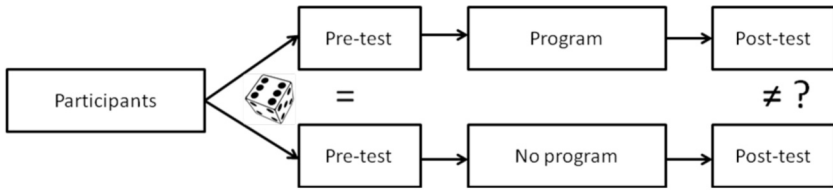
**Strengths:** Similar to design #3, this design can assess 1) proficiency cut-offs, 2) compare the performance of a program to the standard practice or no program, however 3) it can also rule out self-selection bias.

**Weakness:** Unlike design #4, this design does not collect pre-program demographics or pre-test information. Therefore this design cannot assess change or statistically control for group differences in case random assignment failed. In addition, without random selection of the participants in general, there is no way to assert that the participants who were randomly assigned were not different or unique in and of themselves. For example, if everyone in the initial sampling pool were high achievers, regardless of which group they were assigned to, the results of the manipulation may not work for students in general.

**6. Pre-test and post-test with a control group and random assignment:** The pre-test and post-test design with a control group and random assignment is the strongest quasi-experimental design. There is not a random selection of participants to get randomly assigned into groups, but otherwise each step mimics a full-fledged experiment. Of a participant pool, participants are randomly assigned into each group(s), a pre-test is administered, the treatment or program is delivered, and a post-test is administered.



Figure 6. Pre-test and post-test design with control group and random assignment

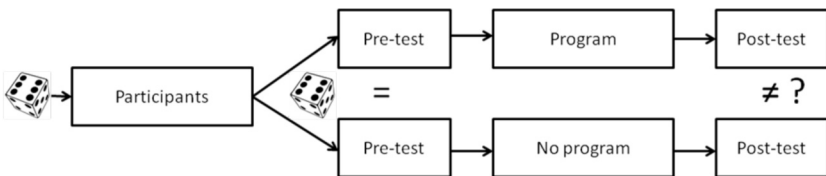


Strengths: This design has all the strengths of designs #1-5. The evaluator can assess whether participants 1) met a given cut-off, 2) improved during the course of the program, 3) treatment(s) outperformed controls, 4) groups were comparable, 5) and cancelled out self-selection bias. If two (or more) control groups were included with varying levels of cultural responsiveness (from none, to low, to medium, to high), this would be an incredibly powerful and informative design.

Weakness: The only weakness of this design is that the initial sample might be comprised of different or unique individuals, such that the conclusions of the quasi-experiment would not be applicable to the general population (e.g., of Native students).

**7. Pre-test & post-test, control group, random selection + random assignment:** This seventh design represents the true experiment. Out of a universe of a given population, participants are selected at random. Of those randomly selected participants, those are randomly assigned to treatment and control groups, administered a pre-test, delivered a program (or not), and administered a post-test.

Figure 7. Pre-test and post-test design with control group, random selection, and random assignment



Strengths: This design has all the strengths of designs #1-6. The evaluator can assess whether participants 1) met a given cut-off, 2) improved during the course of the program, 3) treatment(s) outperformed controls, 4) groups were comparable at the outset, and 5) cancelled out self-selection bias. However, this design adds the benefit of 6) heightened external validity, or confidence that results from this study can be applied to the general population. Like #6, if two or more control groups were included with varying levels of cultural responsiveness (from none, to low, to medium, to high), this would be an incredibly powerful and informative design.

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Weakness: Very difficult if not impossible to conduct in real life. Almost every researcher has to work with the samples that they have access to, either through networking or convenience but limited and biased nevertheless.

### **Conclusion**

Culturally responsive education, if nothing else, is an important symbol on systemic and the one-to-one levels. It represents tribal sovereignty and self-determination, good-will between the United States and the up-and-coming generation of Native students, positive and proactive intentions of the educational system, and hope for culturally diverse individuals. Whenever possible, we should use the research methods available to support the transition from standardized system conformity to organic human responsiveness.

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