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A Word from the Executive Editor

Welcome to this edition of the *CLEARvoz Journal*! In this edition we continue our efforts to address issues impacting social justice leadership, educational equity, and underrepresented group advocacy. The *CLEARvoz Journal*, a publication of the Center for Leadership, Equity, and Research (CLEAR), is focused on providing a multidisciplinary forum to provide a broad range of educators an avenue to share scholarly knowledge in K-20 education. We would like to thank the Editorial Review Board members for taking time out of their busy schedules to analyze and critique submitted articles.

This edition of the *CLEARvoz Journal* consists of five articles. In the article *High School Biology in the Age of the Next Generation Science Standards: A Student-Centered Approach*, the authors, Antoinette Linton, Christina Luna, and Sonia Lopez Arnak describe a biology teacher's approach to inquiry-based instruction grounded in a sociocultural learning perspective. Irán Barrera and Denise Longoria then identify and examine cultural barriers and current practices that may affect mental health care service utilization among Latinos in *Examining Cultural Mental Health Care Barriers Among Latinos* identify.

Felipe Mercado follows with his article *Infusing Neuroscience and Education to Create Equity* addressing how the educational field can codify research from neuroscience along with the biology of trauma to help educational leaders and policy makers understand how to work best with underserved populations within school settings to promote equity and a healthier society. Richard Jaffee Cohen continues with the subject of equity in his article *The Transformative Nature of Restorative Narrative Justice In Schools* whereby the author addresses shifting school discipline from cultures of punishment and exclusion to ones of understanding and compassion. This article provides the tools to continue this transformation through an understanding of how narrative processes when merged with neuroscience help gain deeper understandings of the effective use of restorative processes.

In the journal's final article, David *Black Teachers: Surrogate Parents and Disciplinarians*, David Sandle uses aspects of critical race theory (CRT) to examine the uncommon emotional and psychological and other school-related responsibilities experienced by Black teachers as they discharge their duties as educators.

These five articles bring to the forefront the need to be attentive to the manner in which areas of social justice leadership and equity are impacted in the educational system. The authors' insights and perspectives truly challenge our reasoning and our intentional activism (praxis). As the CLEAR mission indicates:

The Center for Leadership, Equity, and Research (CLEAR) is dedicated to eliminating educational and social disparities that impede equitable opportunities and outcomes for all students and the communities from which they arrive. This includes advocacy by its leadership that is called upon to intentionally amplify a collective voice of educational leaders and allies through a forum of professional learning and community empowerment

As the President and CEO of the Center for Leadership, Equity, and Research (CLEAR) I invite you to join us and become part of our social justice movement.

Kenneth R. Magdaleno



Black Teachers: Surrogate Parents and Disciplinarians

David Sandles, Jr., *California State University, Fresno*

Abstract: This article uses aspects of critical race theory (CRT) to examine the uncommon emotional and psychological and other school-related responsibilities experienced by Black teachers as they discharge their duties as educators. The CRT tenet color blindness explores the degree to which schools fail to acknowledge the color of non-white teachers. The interest convergence principle of CRT critiques how school districts are served by Black teachers serving as school disciplinarians. Intersectionality refers to the discrimination against teachers on the basis of race and another identifiable factor. Despite their best efforts, Black educators are regularly typecast as disciplinarians for Black students. Additionally, Black teachers are charged with serving as veritable parents within educational settings, rendering scores of exceedingly qualified educators willing to serve, but also overburdened and sometimes disillusioned with the additional duties. This writing prompts additional research to further examine this understudied phenomenon.

Keywords: Black teachers, Black educators

For many years, Black teachers have endured significant and stiff opposition to their seamless integration into the educational workforce. Especially injurious to Black teachers, implicit bias prevents scores of Black educators from receiving advancement opportunities once hired, despite their intellectual and pedagogical prowess (George, 2015). Implicit bias is interpreted as the cognitive process that causes people to have adverse feelings and attitudes about others based on qualities like age, race, religion, ethnicity, and appearance (Rudd, 2014). Implicit bias occurs unconsciously, therefore, people are normally not cognizant of the scope or degree of its intensity. Some of the implicit bias directed at Black teachers can take the form of barring Black educators from various career options due to negatively held preconceived ideas, and the employment of deficit thinking in connection with the capacity of Black teachers (Rudd, 2014).

Explicit or flagrant discrimination against Black teachers' entrance into the field is an obvious, pernicious culprit of opposition to employment, with Black educators regularly overlooked for teaching and school administrative positions in favor of their supposedly more capable white counterparts. While variations of this phenomenon have occurred for the past several decades, the particularly fiendish aspect of the current iteration is that research demonstrates a pressing need for Black educators, especially Black males (Bryan & Ford, 2014). Although Black educators are currently regular fixtures in school districts around the country, the roles inherited

and dutifully adopted by Black teachers are often variegated and complex beyond conventional measure.

The Problem

Ostensibly, Black educators are hired to teach students; however, in many instances an intriguing dynamic occurs when Black educators are hired in traditional school settings. Black teachers are inordinately tasked with addressing disciplinary challenges brought by Black students, nurturing psychological needs, and attending to physical requirements as they arise. For Black teachers, these duties are compounded with the responsibility of satisfactorily educating their students (Pabon, Anderson and Kharem, 2011). For perspective, it is important to note many Black educators are thrust into the various roles, such as surrogate parent and disciplinarian, because, often, these educators actually “see” Black students. According to Allen (2015), scores of white, middle-class teachers prefer to enclose themselves in a colorblind ideology, one that effectively prevents them from seeing color. Further, Allen asserts many white teachers resist discussion or examination of racial issues, choosing to adopt “colorblind” approaches to interacting with their students. Approaches such as this inflict unnecessary psychological harm on non-white students, as they are stripped of an honest acknowledgement of their identity (Allen, 2015).

Like Black Americans in general, Black teachers experience extreme cases of “twoness” or double consciousness (Lewis, 2014). In dealings with mainstream America, Black Americans must continuously contend with the challenges brought about by racial incongruity, challenges such as hiding true political leanings or perspectives on social issues (Lewis, 2014). Speaking specifically about Black male teachers, Lewis states, “I contend that Black male teachers enter the classroom and are conjoined with the prevailing stereotypes and propaganda that are disseminated globally about who they are— particularly in the United States” (pp. 12-13). Lewis continues, “This warring of identities—perception versus reality—is not only a factor in the school structure, but an everyday experience for Black males” (pp. 12-13).

The notion of double consciousness is compounded for Black teachers, who must successfully navigate social circumstances as well as serve varying functions for Black students. Black teachers contend with another pervasive phenomenon. They must deal with the struggle of having their identity crafted for them by whites. For Fordham and Ogbu (1986), part of this struggle was against *acting white*. For Fordham and Ogbu, one aspect of *acting white* is described as Black children consciously failing to achieve high levels of academic success for fear they will be shunned by their cultural group. By extension, Black professionals experience a converse circumstance. Black professionals must ingratiate themselves with whites and often think and behave as whites in order to achieve some measure of success.

For numerous teachers, the manner and decorum with which they conduct themselves has been prescribed by white America. In essence, this prescription of how to think behave forms a psychological oppression of Black teachers. For many Black teachers, a constant and intense struggle is one for self-definition (Richardson, 2015). Apart from implicitly being told they must serve as teacher, caregiver, disciplinarian, psychologist, and race educator, Black educators often seek to determine for themselves whether these roles fit into their idea(s) of being a teacher, as white teachers do not bear the same degree of burden with their students. The purpose of this article is to explore the inordinate emotional and psychological responsibilities experienced by Black teachers as they attempt to discharge their duties as educators.

Historical Background of Black Teachers

Prior to the *Brown v. Board of Education* decision of 1954, Black teachers were hailed as esteemed professionals and Black students were encouraged to become educators. According to Tilman (2004), “Black educators helped to build and operate schools, secure funding and other needed resources, worked with the Black community, and toiled as advocates for the education of Black children” (p. 282). Moreover, the aforementioned Black teachers were nurtured by and steeped in the ethos of their surrounding community. Siddle-Walker (2000) found that pre-Brown, the work of Black teachers was undergirded by the following five core principles: “Teachers should develop a relationship with the community; teachers should be committed to professional ideals; teachers should care about their students; teachers should relate the curriculum to students’ needs; teachers would receive community and school forms of support” (Siddle-Walker, 2000). The *Brown v. Board of Education* decision changed much of that, with Black teachers being roundly fired or otherwise displaced as primary educators of Black children (Irby, 2014). In one instance, all the Black teachers in a Florida town were fired in the aftermath of the Brown decision, while less qualified white teachers retained their positions (Orfield, 1969).

In the subsequent years following the *Brown* decision, large segments of Black children were integrated into white schools and Black schools often closed or simply removed Black personnel (Irby, 2014). Further, Irby contends the Brown decision brought about a de-racializing of education, changing narratives about important social considerations to neutral, diluted narratives regarding irrelevant societal issues. In agreement, Bonilla-Silva (2003) argues that “*Brown* and the Civil Rights movement more broadly forced the country into public conversations about race, it also had an eventual effect of deracializing public discourse in ways that reduced overt expressions of racism” (p. 785). Bonilla-Silva further contends that the foregoing dynamic led to the color-blind movement currently employed today by white school personnel. Perfectly encapsulating the disadvantageous impact of the *Brown* decision, Hudson and Holmes (1994) offer the following representation:

In 1954, the year of the Supreme Court’s decision in *Brown v. Board of Education of Topeka, Kansas*, approximately 82,000 African American teachers were responsible for the education of the nation’s two million African American public school students. A decade later, over 38,000 Black teachers and administrators had lost their positions in 17 southern and border states. (p. 388).

During the post-*Brown* years, Black educators were undoubtedly changed. While they once served as powerful, inspirational educators, the comparably fledgling number of current Black teachers now bear the responsibility of fulfilling numerous roles, perhaps more so than pre-*Brown* (Kluger, 2011). Post-*Brown*, Black communities around the country were summarily and surreptitiously disempowered because of these dismissals (Reardon & Owens, 2014).

Critical Race Theory and the Black Teacher Experience

Fundamentally, CRT offers conceptual tools with which to critique the institutional and systemic oppression specifically exacted upon non-white people (Delgado & Stefancic, 2017). Consequently, CRT is contributive to analysis of the roles Black teachers play in contemporary society. CRT emphasizes core principles concerning racism embedded into the fabric of American society. At its nucleus, CRT asserts that racism is foundational bedrock upon which American society is structured, and it maintains racism is a constant societal feature (Bell, 1987). Racism, Bell argues, is a characteristic that preserves the interests and needs of the white people and the

paradigmatic infrastructure built by whites. For this writing, two tenets of CRT are critical to the analysis and evaluation of the Black teacher experience: Interest convergence and intersectionality.

Interest Convergence

Interest convergence is a tenet of CRT which argues that white people will support and promote issues put forth by Black people as long as two interests converge. CRT scholars contend that the interests of non-whites will only happen when there is a convergence of the interests of those in power (Sleeter, 2017). This article contends there are two main respects in which interest convergence applies to the experience of Black teachers: Black teachers as surrogate parents and Black teachers as disciplinarians.

Intersectionality

Davis (2008) defines intersectionality as the interplay of multiple identities and varied experiences of exclusion and subjection. Intersectionality presupposes that non-whites experience oppression because of race, in addition to association with other identities, such as, class, religion, gender, sexual orientation, etc.

Current Responsibilities of Black Teachers

Former Secretary of Education, John King (2016), proclaimed how important a diverse teaching force can be for America's children, saying "...we need a teaching force that is as diverse as our students (p. 2)." He went on to say, "it's a real contributor to better outcomes in our schools, workplaces and communities" (p. 2). Along with this admission, former Secretary King also identified a critical issue that often plagues teachers of color. What former Secretary King referred to as the *invisible tax* on Black teachers is an ardent challenge facing many educators. According to King, the *invisible tax* "is imposed on them when they are the only or one of only a few non-white educators in the building" (p. 2). He continues by saying the tax is paid when these educators are expected to function as school disciplinarians based on an assumption they are better able to communicate with Black children with behavior issues. In the same article, Harry Preston, an African American physics teacher, explains the "invisible tax" from his view. "Every time I take my students to an engineering competition, or to speak with industry partners, or to tour colleges, I have to have the code-switching talk" (p. 4). Preston goes on to say, "That is a mental tax I personally pay as an educator (p. 4)." Accordingly, when Black educators such as Harry Preston must contend with a spate of issues confronting many Black students, white educators are largely freed from dealing with those challenges.

In some educational settings, school personnel presume Black teachers possess the desire and capacity to serve as role models for Black children. Relatedly, some scholars readily bristle at the accepted overestimation of the impact of Black teachers on all matters afflicting Black students. According to Pabon et al. (2013), presenting Black teachers as a "panacea to the Black male educational crises absolves the institution of public schooling in the U.S. of its role in creating and sustaining the conditions that foster the failure of poor students" (p. 12).

An added burden placed on Black teachers is the responsibility to serve as keepers of knowledge for all things concerning Black culture (Madsen & Mabokela, 2016). As the appointed spokespersons for Black America, Black teachers regularly spend inordinate time explaining to white people certain nuances of the Black experience (Madsen & Mabokela, 2016). Moreover, Black teachers are often, tacitly or verbally, encouraged and expected to serve on curriculum committees and participate in multicultural celebrations. Also frustrating for many Black teachers

is the notion that their colleagues are able to participate in just enough of the multicultural activities to be “politically correct,” while Black teachers must do noticeably more. In addition to the enumerated responsibilities, Black teachers have appreciably more duties.

Black Teachers as Disciplinarians

“I was the only Black teacher there, but I handled basically all the discipline problems” (Griffin & Tackie, 2016)

For untold numbers of American citizens, the imagery of an overpowering, domineering Black educator is not only rampant, but exceedingly accurate. According to Brockenbrough (2015), in general, Black teachers tend to mimic the style and manner of students’ families. Sometimes stern, sometimes rigid and harsh, Black teachers often demonstrate their affection for students through austerity, the same manner that has served to ward off threats to Black children. Brockenbrough contends it is this style which endears Black teachers to their students. Similarly, King (1993) found that Black teachers hold particular significance in the lives of Black pupils as Black teachers represent many roles, including that of primary disciplinarians for untold numbers of Black students. Naman (2009) maintains the state of many non-white communities place education as an “important survival mechanism and the principle means to advancement” (P. 122). Naman’s assertion is important because it places teachers at the fulcrum of the vehicle for advancement. In Black communities, Black teachers are crucial to that education.

Partly because of the hackneyed notion of Black teachers as stern disciplinarians, scores of teachers become characterized as authoritarian even when the label is misapplied. Brockenbrough offers the following representative excerpt regarding the disciplinarian stereotype: “For some Black men, that stern, real hard-core approach works, but you can’t force it. You can’t force something that’s not there. That rigid structure, drill sergeant approach is not me” (p. 15). Brockenbrough (2014) goes on to say that Black men teachers can easily be relegated to the role of enforcer for punitive school disciplinary systems, and that in some instances, Black teachers are regarded as the “big, bad, Black, scary teacher” whose blackness can be used to intimidate and overwhelm wayward Black children. Conversely, some teachers relish the challenge to demonstrate their prowess at managing unruly student behavior. “I didn’t have to get loud or do anything. It was just, I had a no-nonsense kind of attitude, where it’s a lot of nonverbal cues. ‘I expect more from you.’” (Deruy, 2016, p. 16).

The Black teacher as disciplinarian role is an added responsibility many teachers must endure, and while some actualize and endorse this charge, others forcefully rail against it. The Black teacher as disciplinarian trope is potentially injurious to the actual manner of Black educators.

Disciplinarians and Interest Convergence

According to Milner, Pearman, and McGee (2013), white people feel fearful that comprehensive, systemic changes will menace them in personal ways. Milner et al. go on to assert that when non-white people gain something, it is a threat to the maintenance of the status quo. Accordingly, when Black teachers are hired regarded as disciplinarians, the role invariably aligns with the aims of the white establishment, which would rather assign Black educators to deal with unruly Black children (Vasquez & Altshuler, 2017). As a result, Black teachers become charged with “fixing” Black children rather than educating them. This phenomenon serves as a singular and important benefit to the white establishment. Primarily, it relieves white teachers of having to

contend with the sometimes numerous emotional and behavioral challenges brought by Black students, challenges often brought about due to systematic racism (Vasquez & Altshuler, 2017).

While the Black teachers as disciplinarian trope seemingly benefits Black educators by extending employment opportunities, it actually serves the interests of white school personnel, because they are left to educating white students, thereby improving the overall academic capacity of white students. In short, the interests of both parties converge to produce a mutual, albeit unequal benefit. The overall advantage of this arrangement tilts heavily in favor of purveyors of the status quo, as scores of Black children are accommodated by the hiring of relatively few Black educators (Sleeter, 2017).

Disciplinarians and Intersectionality

Because Black educators face uncommon scrutiny and discrimination, they are often unfairly judged as inferior, incapable and discipline-centered (Griffin & Tackie, 2016). Widely spread and deleterious narratives concerning the nature of Black teachers are exacerbated with the additional adjectives affixed to their race. When joined with race considerations, socially inflammatory topics such as gender and sexual orientation can especially undermine effective Black educators, particularly women, who sometimes unnecessarily bear the label of “mean”, “strict” or other similarly pejorative descriptors (Milner, 2012).

Black men teachers also face challenges due to the intersection of their Blackness and maleness. According to Brockenbrough (2015), Black men teachers are challenged to be a particular way, usually perceptibly strong and “manly.” However, Brockenbrough notes, some Black men educators bring their lived experiences as Black male queer teachers into educational settings, only to be discriminated against and regarded as weak, unmanly and ill equipped to serve as role models for Black boys. This brand of discrimination is heightened by narratives about Black men as disciplinarians and the conventional perception of their physical, psychological and emotional virility (Brockenbrough, 2014).

Further, when Black teachers are called upon to corral and correct misbehaved Black students, arguably, it smacks of racist allusions to brutish, physical, vociferous figures, who menacingly lord over Black children (Griffin & Tackie, 2016). In addition to that racist model, the intellectual and pedagogical strengths of Black teachers are also greatly diminished by the depictions of them as disciplinarians. These teachers are often limited to *only* teaching Black students and are esteemed only for their agency to handle disciplinary problems (Griffin & Tackie, 2016). While Black teachers should be lauded for their ability to deftly manage classrooms, they should not be relegated to *only* dealing with behavior issues to the exclusion of refining their pedagogical prowess (Naman, 2009).

Additionally, the Black teachers who are inclined to focus their attention on behavior modification of students should be cognizant of their public perception. “Well, I don’t know if it’s a positive stereotype, but it’s a stereotype that all Black men can handle kids. You know, we’re aggressive. We’re the big, bad, Black, scary teacher” (Brockenbrough, 2014, p. 514). Because these stereotypes have persisted over protracted periods, it is crucial that Black teachers develop a keen awareness of their daily words and actions so as not to needlessly contribute to these generalizations.

Black Teachers as Surrogate Parents

Well, I don't think I can separate being a parent from my job as a teacher. Because I'm teaching my own children. I look at the children that I serve as an extension of me. I want them to go out and be their very best, because they represent me (Griffin & Tackie, 2016).

According to Lyons and Chelsey (2004), Black teachers have served as surrogate parents to Black students for generations. Lyons and Chelsey submit that white teachers are regularly underprepared to effectively teach Black students, therefore they are incapable of fulfilling a quasi-parental role. Correspondingly, Franklin (2009) argues Black teachers have historically bridged the home-school chasm by serving as surrogate parents to their Black students. Moreover, as surrogate parents to their Black students, Black teachers provide their pupils with the social skills and emotional guidance needed to successfully navigate through environments rife with institutional racism (Sealey-Ruiz & Greene, 2011). Regrettably, many white school personnel lack the skills and compassion necessary to connect home to school in Black communities (Sealey-Ruiz & Greene, 2011), which creates an urgency for Black teachers to cultivate positive, meaningful relationships with students.

Black Teachers as Surrogate Fathers

Black teachers, especially men, find themselves particularly sought after for surrogate familial relationships because so many Black children reside in female headed households. Snyder, McLaughlin and Findeis (2006) contend that as many as 75 percent of Black boys live in homes managed by females. With that reality, Black teachers often fill the father-figure role for students. Additionally, Black men teachers are capable of filling the father-figure role because they are typically the most demonized non-white group of Americans. As such, Yancey (2003) maintains that because Blacks were kidnapped from Africa and brought to the U.S., summarily subjugated by Whites, and are continually persecuted, Black students revel and delight in being around teachers who have surmounted immense difficulty. According to Yancey, this background provides an impetus for Black students' receptivity towards Black men as both teachers and surrogate fathers.

Black Women as Surrogate Mothers

Similarly, Black women teachers fill a parental void for scores of students. To aid in elucidating this relationship, Henry (1998) references the term *othermothering*, which signifies the "ethics of caring which Black women teachers impart to Black children as a part of their commitment to the survival and wholeness of the communities children" (p. 17). *Othermothering*, according to Henry, is the unspoken, undergirding philosophy Black women teachers employ when they nurture their Black students. In addition to imparting students with academic content knowledge, Black women teachers intuitively imbue Black students with the skills essential for survival and success in a patently racist society. Historically, *othermothering* originates from the relationships created and developed between slave women, whose children who were often left motherless primarily because of slave trading and acts of murder (Collins, 2000). When Black women teachers *mother* their students, they transmit considerable age-old experiences and wisdom. According to hooks (1994), Black women teachers bring with them gendered experiences that have traditionally been quieted and disenfranchised in educational circles. Often, it is this voice Black women teachers use to candidly convey important, sometimes life-saving messages to students. Because of these rich experiences with Black teachers, Black students develop improved political and educational awareness, in addition to increased social cachet.

Surrogate parents and Interest convergence

The roles fulfilled by Black teachers are myriad, but none is more essential than that of surrogate parent. This role is so significant that white school personnel around the country wisely eschew these functions and defer to seasoned, culturally proficient Black educators (Deruy, 2016). Meanwhile, the interests between proponents of the status quo and Black teachers converge when Black teachers often eagerly occupy the roles expected of them, and white school personnel are able to hire meager numbers of Black teachers for the express purpose of contending with wayward Black children in need of support. Ironically, Black educators often willingly provide attention and guidance to Black children in educational settings, yet there is little to no attention given to the fact these teachers regularly have their own children who require the same kinds of attention (Irby, 2014).

Surrogate parents and Intersectionality

Typical conceptualizations of racism and discrimination, such as sexism, racism, and homophobia, are insufficient to characterize the degree of prejudice faced by Black teachers. Instead, these individual oppressions commingle, creating an intersection of new forms of prejudice (Howard & Navarro, 2016). Further, the Black teacher as surrogate parent trope is a familiar one that harkens back to earlier times. In times past, Black educators served as caretaker and educator for children other than their own, without much complaint. Currently, the existing narrative of Black teachers as surrogate parents includes the racist implication that Blacks are willing and natural caregivers of other people's children (Henry, 1998). While there is basis to the idea that Black teachers are exceedingly capable as educators of Black children, the intersection between Black people and teachers gives power to the somewhat racist implication that Black people can work indefatigably, provide for and nurture others, and are to be continuously worked in order to prove their value. Particularly for Black women, the idea that the intersection of those two qualities imbues teachers with innate capacity to juggle these multifaceted functions is an insensitive and racist social construction.

Implications

Initially, I began examining the numerous roles of Black teachers in the school setting and briefly identified the stated purpose of Black educators in the field of education. Using Critical Race theory, I identified some of the impediments to the seamless integration of Black teachers into the educational fold. In truth, education policy makers have the ability to disrupt some of the continuous problems that plague Black teachers. More than anything, an understanding of the inordinately prodigious set of responsibilities charged to Black teachers and hiring additional staff to accommodate some of these roles would be an impressive start.

Under CRT, the idea of interest convergence gives school leaders and policy makers fodder for discussion concerning the reasons actions are taken and whom those actions benefit. With this information, educational policy makers can begin to make informed decisions that reflect the best academic and social emotions needs of students, while also professionally developing all staff members in best practices in cultural proficiency.

Respecting intersectionality, the information provided offers readers a chance to influence deliberate, clear policies and practices regarding the superimpositions on Black teachers and the various intersecting permutations. Armed with the information supplied and analyzed here,

meaningful conversations are needed to reverse the racist practices directed toward Black educators.

Conclusion

Black teachers have always served as social change agents. Dating back generations, Black teachers have been integral in the development and efflorescence of their communities, from both educational and social perspectives. Wholesale and impacting changes to the profession, namely *Brown v. Board of Education*, brought about unforeseeable dynamics to both education and Black communities around the United States. Because of those changes, Black teachers in contemporary society are tasked with taking on greater responsibility than their counterparts, often serving as disciplinarians and surrogate parents in the educational setting. With these responsibilities, many Black teachers opt to leave the profession in favor of less emotionally taxing work.

According to various studies, the academic and social prospects of Black students largely rests on the efforts of strong, effective Black teachers, teachers who have artfully navigated the social and political terrain and gained some measure of success. The social gymnastics Black teachers undergo can serve as a prescription for young Black people, providing a list of pratfalls to avoid and the best pathway to academic and social success. Although the challenges faced by Black teachers are considerable, so much so that many leave the profession, the potency of their experience is invaluable to the enhancement of subsequent generations of Black students. Although this burden on Black teachers is immense, it is essential, as there is a shortage of capable, willing candidates to fulfill these roles.

In order to continually gain understanding of this complex phenomenon, additional studies are required. Future studies should address the degree to which Black teachers feel stress and frustration in their various roles. Subsequent research could also examine the male equivalent of *othermothering* to gain greater appreciation for the symbiotic interaction between Black teachers and students.

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The Transformative Nature of Restorative Narrative Justice In Schools

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Abstract: Restorative justice (RJ) over the last decade has had a positive impact on school cultures that have begun to shift from cultures of punishment and exclusion to ones of understanding and compassion. This article provides the tools to continue this transformation through an understanding of how narrative processes when merged with neuroscience help us gain deeper understandings of the effective use of restorative processes. Narrative processes encourage the examination of the whole person and his or her identity. Our lives are lived within a socio, cultural, and gendered setting. Being aware of this context, and recognizing the often problematic nature of educator-student relationships, we need the skills to try to prevent problems from arising, and when they do arise, respond to them with compassion, not react to them with anger. Narrative processes encourage and promote the separation of the problem from the person, and the deconstruction of power dynamics that allow for a more equitable, non-judgmental educational pedagogy to emerge. Neuroscience lends strong scientific support for our compassionate nature.

Introduction

Restorative justice in schools is a process that is based on relationships, not rules. The restorative practices and processes that have grown out of restorative justice are designed to teach empathy and understanding, as well as to *respond* to conflict by empowering those who cause harm to make things right, and in the process, heal those who were harmed. By contrast, traditional school discipline practices *react* to conflict by excluding students from class or use rewards to gain compliance to rules. The use of suspensions and expulsions create a process of banishment that both deprive students of an education and stigmatizes them as being morally deficient. Giving students rewards for good behavior is akin to buying them off and is just the other side of the punishment coin. Neither approach prepares young scholars for a future where self-control and pride in achievement for its own sake become her or his guiding light.

Restorative justice presents schools with both the opportunity and the means to change the punitive paradigm and to substitute it with a pedagogy of ethical values that promotes social and emotional learning and other compassionate practices that address the whole student. Those who are harmed and those who cause harm are given a voice and an opportunity to heal. This does not happen when resentment building suspensions or expulsions are the only choices. RJ and the restorative practices and processes that have grown out of it represent a paradigm shift in both prevention and response to actions that cause harm (Zehr, 2002; Amstrutz & Mullet, 2005; Evans & Vaandering, 2016).

This article will explore RJ and the restorative practices used in schools from a narrative perspective, (Winslade & Monk, 2008; Winslade & Williams, 2012; Kecskemeti, 2015; Kecskemeti, Kaveney, Gray, Drewery, 2013) and invite teachers, administrators, support staff, students, parents, and care givers to help shift the punishment paradigm. To implement this shift, we will examine the practices and processes of restorative circles, restorative conversations, restorative mediations, restorative conferences, and recent advances in neuroscience that support these practices and processes. Integrated within these practices will be a discussion of how culture, trauma and social and emotional learning operate to enhance our understandings.

We at the Restorative Schools Vision Project (RSVP) have embraced RJ and developed our own practices and processes that apply the healing and empowering aspects of restorative justice together with the transformative potential of narrative processes. We have also gained insights from the rapidly developing fields of neuroscience and neuropsychology (Goleman, 2006; Doidge, 2007; Iacoboni, 2008; Keltner, 2009; Siegal, 2011, 2013; Hanson, 2013). Our purposes are to shift the power dynamic paradigm from power and control to understanding, kindness, and healing.

Restorative justice relationships include students, parents, teachers, administrators, school staff, care givers, and community. The preventive practices include working with students to learn self-control and respect for self and others, or more precisely, to see the lines between self and others begin to dissolve. To highlight the significance of bringing about inner transformation in the lives of students, the Dalai Lama opines:

When discipline is imposed from the outside, it is very rarely effective and sometimes can even be counterproductive. When discipline is imposed by fear, either fear of some external authority or fear stemming from our own cultural or religious conditioning, the individual often feels very little enthusiasm for it. As a result, imposed discipline rarely brings about inner transformation.

On the other hand, if we adopt self-regulation voluntarily, out of appreciation of its value and the benefits of refraining from bad habits, it is only natural for us to undertake it with greater determination. This in turn makes our self-discipline more enduring. (Dalai Lama, 2012, pp. 147-148).

To prevent harm requires self-control and an awareness of how we affect others. This is not always easy for young people themselves exposed to lives of trauma and abuse. An antidote to loss of control is to learn empathy and compassion. This can only be generated in a supportive environment. Everyone makes mistakes. Old habits, fed by insecurity, fear, and anger can help to create a toxic school environment that effects all parties—students, teachers, administrators, staff, and families. In contrast, when we are invited into a caring and supportive environment, maybe for the first time, we can begin to see our interconnectedness and need for each other (Dalai Lama, 1999).

The responding practices are about healing, forgiveness and making amends. This requires a careful examination and deconstruction of the power dynamics between teachers, administrators, school staff, and students. It is not about giving up of power, but about the democratization of power and the recognition of the agency and dignity of our students.

To help make this cultural shift, this paradigm shift, we can turn to restorative justice as a framework or scaffolding. Other frameworks, like Social and Emotional Learning (SEL) (Collaborative for Academic and Social Emotional Learning (CASEL), 2008, 2013) need practices to be implemented. We believe that restorative narrative process and practices are the most effective

way to educate about and to implement RJ, SEL, Implicit Biases, and Trauma Informed Practices. Students respond to justice. Administrators, teachers, and staff benefit by working with processes that aim for transformation, not control.

Some practitioners prefer the term transformative justice, instead of restorative justice, since they believe that many of the students who they work with have no positive way of life to be restored. This is a limiting view of transformation. On an immediate environmental level, in some cases this may be true. However, on another more profound emotional and psychological level, Goleman has presented evidence that we are hardwired for kindness, (Goleman, 2006), and Keltner has presented evidence that we are all inherently good (Keltner, 2009). As restorative practitioners, and as peacemakers, our goal is to listen to and work with those who come before us in order assist them to reconnect to this inherent goodness. This is what transformation is all about (Freire, 2000; Davies, 2014).

Restorative Narrative Practices

Like restorative justice, restorative narrative practices are both preventative and responsive, although all restorative practices have a preventative aspect. What distinguishes narrative processes from other restorative practices is the inclusion of a larger context out of which change and healing takes place. Narrative processes look beyond the immediate factual setting of events and ask how gender, race, religion, poverty, culture, and other factors affect what is going on. By examining taken for granted assumptions about identity, a new awareness or mindfulness arises that allows for deeper understandings to take place, judgements to be suspended, and a clearer picture of what is really going on to emerge.

We will examine these restorative narrative practices within the context of the preventative tools of circles and conversations and then the more responsive tools of mediations and conferences.

Circles

Circles level the playing field. In a circle everyone is equal and hierarchal power structures are minimized (Riesenberg, 2012; Boyes-Watson & Prantis, 2015). The preventative circle is one where the student is heard and learns to listen to and understand others. Circles are like jazz, everyone gets his or her turn to shine. Students bring all their troubles to school, some of which are traumatic in their nature and origin (Brown, 2013; Van der Kolk, 2014). A check-in circle at the beginning of the school day gives students a chance to get in touch with her or his feelings and, if difficulties are occurring in their lives, to speak their troubles into existence. If the student sees the circle from a mindfulness perspective, a safe non-judgmental space (Kabat-Zinn, 2012), she feels safe to speak her mind. At first, some students may feel reticent to speak up, but with time and experience, trust builds and empathy grows. For some students, this may be the first time they have dealt with trouble this way, and the first time they felt so supported in their efforts to cope. This is social and emotional learning.

In an elementary school where we were facilitating a circle, one student spoke up and said he was unhappy and wanted to go back to the preceding grade. He said that he felt stupid because the math was too hard for him. In response to his concerns, half the class spoke up that they would help him with his math. But for this circle experience, this may never have occurred.

By using the narrative practice of externalization (*the person is not the problem, the problem is the problem*) (White & Epston, 1991; Winslade & Monk, 2001; Winslade & Williams, 2012; Trungpa, 1993, p. 74; Fischer, 2013, pp. 73-74), students not only deal with the problem, like

getting support from fellow students, but can also learn how to substitute strength, competence, resolve, and other positive emotions or ways of being, for their troubled ones. From a narrative perspective, this can be viewed as separating from the problem story and embracing the preferred story of one's life (Winslade & Monk, 2008). This is consistent with a neuroscientific perspective articulated by Hanson, that we are hardwired for happiness (Hanson, 2013). During a circle facilitated in a third-grade classroom, I asked the students: What do you do when you are in a bad mood? One student raised his hand and said: "I throw my hands above my head and say, what a beautiful day."

Another example of embracing the preferred story of one's life is to ask, either in a circle or a conversation, a student who says that he feels sad because someone yelled at him the previous evening, if anyone showed him any kindness lately. By asking this simple question, the student is invited to rethink his sad mood and remember that he does not have to be dominated by his mood, and that he is cared for. The research conducted by CASEL has demonstrated that a positive emotional environment will set a student on a pathway where learning can be maximized. (Collaborative for Academic Social and Emotional Learning, 2013).

When trust has been well established through repetitive circle practice, circles can also be used to respond to harm causing behaviors and to problem solve. This practice strengthens class cohesion and promotes empowerment.

Conversations

Because of the public nature of circles, they may be inadequate for dealing with certain personal problems. The practice of a restorative narrative conversations allows for deeper and often more personal reflection. This type of conversation between student and teacher or administrator, above all, promotes trust and mutual respect. In the words of Cozolino, "These reports should not be taken lightly; they reflect the biological reality that we learn better when we are face-to-face and heart-to-heart with someone who cares about us." (Cozolino, 2013, p. 50). In this practice, the emphasis is, as in circles, mediations and conferences, always on the anti-essentialist statement that *the person is not the problem, the problem is the problem*. To assist the student to separate himself from the problem and understand that he is not the problem, multiple respectfully curious questions can be asked. Questions that mine the student's memory for coping strategies, for examples of successful attempts at conflict resolution, or past demonstrations of patience, resolve, and forgiveness. These unique outcome questions help the student realize that he is not a "trouble maker" or any other essentialist label that has been put on him, but that he has "problems" like everyone else, and he doesn't need to let them define him. Looking for unique outcomes is a narrative practice that seeks out those often neglected stories of one's life or of the relationships that influenced one's life, that is, those stories of success, courage, achievement or respectful relationships that are often forgotten or overlooked (Winslade & Williams 2012). These types of questions reinforce that the student has the ability, or can at least work on his ability, to deal with them. Here, the teacher or other empathetic person assists positive emotional development, a welcome addition to her usual role of putting all her energy into cognitive learning.

Restorative narrative conversations present an opportunity for students to discover the better formed story of their lives and to give them new life. Instead of dwelling on negative stories of her life, she is encouraged to articulate her best story, her story of competency, of courage, and of kindness.

One way to enter into this conversation is to deconstruct (Winslade & Williams, 2012), the context of events. If the student demonstrates a disrespectful reaction to the teacher, the teacher

may simply ask: “what’s going on?” It would not be unusual for the student to respond that, “I’m having a bad day.” Going deeper, the teacher, with permission, may ask, what does “a bad day look like”, or “is there something that has happened in your life recently that has caused you to have a bad day?” This type of respectful deconstructive enquiry may help the student better understand herself and help isolate the causes of the trouble. In the process, the teacher is building a more trusting relationship with the student and helping her get beyond her troubles. The conversation can also reinforce in her the idea, that whatever the causes of her bad day, by going inward, she can find the resolve to push the bad mood away, and remember her best self, the one she truly wants to inhabit. This can be achieved by asking restorative-narrative questions.

Before asking any questions, it is crucial to recognize that relationships require responsibilities for all involved parties. Teachers, administrators, and supportive school staff need to become aware of how trauma, cultural values, and ways of expression impact students’ lives. If we are to make a dent in the school-to-prison pipeline and school pushout, we, the teachers, administrators, and staff must open ourselves up to new learning, and the development of new positive neural pathways. A restorative narrative approach to understanding and transformation requires an examination and reflection of the full context out of which we respond to what comes before us. Recently, much has changed on the national scene and in our collective consciousness. The Black Lives Matter movement as well as the Me Too Movement have challenged us all to re-examine the cultural, racial and, gendered context out of which we relate and how we can become more mindful of the effects of both our conscious and unconscious efforts at cultural dominance, as well as our awareness of our explicit and implicit biases (Asante, 2017; Nylund, 2006; Steele, 2012; Alexander, 2012; Rumberger & Losen, 2016).

The purpose of using restorative-narrative questions is to move students away from being part of the problem and move them towards being part of the solution. These are conducted between the students and the teacher, or between student and principal, assistant principal, staff, or restorative coordinator.

Levy & Cohen, senior trainers for RSVP, prepared the following questions as some examples of restorative-narrative questions:

Asked of a student who demonstrates bullying acts toward another student:

- Can we talk about what is happening in your life?
- How would you characterize your greatest caring qualities?
- Do you demonstrate these qualities to your family? To your friends?
- How did you learn to act this way? e.g., loyal, friendly, helpful
- Do you prefer acting like a good guy?
- What gets in the way of your acting like a good guy?
- It seems like your bullying actions were out of character for you. Is that right?
- It seems like you have the strength to push away the problem of bullying actions. Do you agree?
- Do you have any ideas about how you will accomplish this?
- Will it help if some of your friends remind you when they see the bully problem trying to gain control over you?
- Do you want to try to challenge yourself to push the bullying problem out of your life for a week?
- Can we check in to see how successful you are at showing the strong and helpful side of you and how you have resisted the influence of that bullying problem?

In summary, after we have first carefully re-examined ourselves as educators and done the hard work of becoming more mindful, we can begin asking respectfully curious questions that will assist us in developing a caring collaborative relationship. When questions are asked from an external perspective, we take the time and have the courage to deconstruct what is really going on. When we search with our students and help them remember their strengths and competencies, transformation begins.

Mediations

When matters get to the point where others are seriously harmed, there are responsive restorative narrative practices such as mediations, conferences, and harm circles that are appropriate. For example, a restorative narrative mediation is appropriate in situations where two students have fought. Some practitioners refer to mediations and conferences as harm circles defined by the fact that everyone involved sits in a circle and follow circle guidelines. Before beginning the mediation process, the teacher/mediator or administrator/mediator needs to co-creating guidelines, i.e., speak one at a time, make “I” statements, speak and listen respectfully, the person is not the problem, the problem is the problem. These same guidelines are also used in circles and conferences. As in all mediations, the students in this case must be given a voice and, asked to give his perspective on what has happened. After listening carefully to what is said and reformulating what was heard, instead of entering into an extensive “who done it” discussion, the mediator asks the students how the events that just happened have affected them. By guiding the enquiry into empathy and understanding, not blame, the message is given to the students that the mediator cares about his feelings. This way of interacting has previously been reinforced by earlier circle or conversation practices. There is usually plenty of blame to go around, but there is no need to address this and start talking about taking responsibility until trust and deeper understandings are first established.

As in all narrative practices, trust and understanding can be established by always focusing on the “problem” not the person. By viewing the problem this way, it is easier for students to begin to take responsibility for the harm caused without making demoralizing self-judgments. By leading the students into an exercise that emphasizes the students’ strengths and past abilities to resolve troubles in a non-aggressive manner, the student is empowered to take responsibility, again, not out of fear of punishment, but out of the realization that he is capable, and has the resolve and ability to do so.

Understanding is achieved by naming the problem, by deconstructing the problem (the context), and by seeking unique outcomes. Once deep understanding is achieved, resolution becomes the easiest part.

Conferences

If the level of harm is severe, or repetitive patterns have developed, or the student has been suspended or incarcerated and is returning to school, a more complex responsive practice is called for, that is, a restorative narrative group conference. Here family members and support people are invited to support both the party(s) harmed and the party(s) causing the harm. This conference provides the opportunity for all parties to heal. As in conversations and mediations, by relying on externalizing practices, deconstruction, and mining for unique outcomes, those who caused harm can begin to see negative behavior, as just that, behavior that exist separate from themselves. Viewing these behaviors as a third person, the student is given permission to separate from that harm causing conduct. These narrative conference practices can be enhanced by drawing two circles representing two pictures of the person causing harm. One circle depicts the harm causing

behaviors and their effects on others while the other circle depicts the strengths of the person causing harm and the effects of his strengths on others (Restorative Practices Development Team, 2003; Winslade & Williams, 2012). Each person causing harm is asked to choose which picture best illustrates who he really is, or who he aspires to become. These positive images and behaviors are supported by parents, teachers, coaches, friends or anyone who knows and cares for the students. When those who cause harm are supported, they have an incentive to make changes. In other words, they realize they are not alone in this and others have their back.

This responsive practice, like all restorative narrative practices, focus on the relational situation where all are respected and listened to, those harmed and those causing the harm. Since the focus is not on blame, nor is the result motivated by fear of punishment, those causing harm are empowered to become part of the solution and true accountability takes place.

In a classroom where circles have been practiced for some length of time and trusting relationships have developed among the students and with the teacher, a class participating harm circle can accomplish what mediations and conferences can achieve. There is real value in students solving their own problems. This requires time and patience to develop this trust.

How Neuroscience Informs Relationships

Neuroscience and neuropsychology provide us with a better understand of why troubles happen and then provide us with the tools to do something about them, to transform troublesome ways of interacting into empathetic and compassionate ones. We now understand that the brain has a quality of plasticity that allows it and us, with practice, to change from the negative to the positive (Hanson, 2013). Our evolving brain has both the tendencies to be defensive and protective, as well as being open, caring, and compassionate. Hanson suggested that our positive responses have evolved like Teflon and our negative reactions have become like Velcro (Hanson, 2013). Already limited by the immature development of the brain's executive or control functions, (Klingberg, 2013), students who have experienced trauma at home or in their neighborhoods and who have insecure attachments (Cozolino, 2013) have no difficulty "acting out" or being dominated by fight or flight reactions. However, because of neuroplasticity, this can change. For example, we can now understand the adolescent years as not simply being impulse driven and something to get over, but as the first truly creative period of a maturing life (Siegel, 2013). As in narrative practices, emphasizing strengths, not deficits, parents, teachers, and administrators can help shape positive brain development by appealing to the larger context of the adolescent's life, or as neuroscientist Siegel suggests, "encouraging the reflection on values and on gut instinct, not simply the inhibition of impulses, is the difference between turning down a compelling impulse and embracing a thoughtful belief and value" (Siegel 2013, p. 81).

Not only is the brain malleable, but with the discovery of mirror neurons, (Iacoboni, 2008), it is now understood that teachers and administrators who have a well-developed sense of calmness and compassion can project a caring, empathetic, and compassionate attitude to students instead of anger and frustration. Modeling positive ways of being and interacting as a part of social and emotional learning is the key to school cultural transformation. Teachers hold the keys to transformation of students' brains that have been turned off by neglect and negative experiences. Cozolino reflects that "...teachers literally build new brain structures that turn their students on to learning" (Cozolino. 2013, p. 40).

We now have scientific evidence that we can alter the brain through meditation and other mind training exercises. Goleman and Davidson (2017) lend credibility to our ability to change.

They conclude that, “mounting empirical studies confirm our early hunches: sustained mind training alters the brain both structurally and functionally, proof of concept for the neural basis of altered traits that practitioners’ text have described for millennia” (Goleman & Davidson, 2017, p. 290).

With the tools and understandings learned from restorative narrative processes and practices, mindfulness training, (Kabat-Zinn, 2012), and now neuroscience, teachers can help their students shift out of their old Velcro like habits or harmful neural pathways and transform them into new neural pathways lined with positive thoughts, emotions, and behaviors. What we do today will determine what happens tomorrow. Instead of “reacting”, together students and teachers can learn to “respond” to insults, disrespect, and bullying actions by first pausing and then entering into respectful dialogues. For example, a teacher or student can respond to negativity by expressing what may be his or her true emotion of hurt or sadness, instead of the reactive emotion of anger and impatience, and then proceeding further by ask respectfully curious questions such as: can you help me understand what is happening with you, and why you said or did that, or is something else going on? These types of respectful responsive questions are disarming to the one causing harm. They model a relational way of interacting that gives the one causing harm the opportunity to think deeper about his or her actions or words and thoughtfully respond, not react. It also sends the message that the person asking these questions cares. New meanings emerge from these collaborations. Gazzaniga opines that, “responsibility and freedom are found, however, in the space between brains, in the interactions between people” (Gazzaniga, 2011, p.137).

Accountability follows true understanding, including social and emotional understanding. When this understanding leads students to see that their “relationship” with negative ways of being and acting as the problem, not their “selves”, they are freed up to take responsibility for the problems that arise in their lives. When others respond to these negative or hurtful actions with an expressions of understanding, instead of punishing anger, they begin to better understand that they can take responsibility for their actions. When there is an honest and respectful questioning of motives, followed by questions designed to cause the students to remember their better selves, positive mirror neurons are activated, and the opportunity to change courses from the reactive to the responsive is reinforced.

This takes patience and practice, as does learning to read or remembering multiplication tables or practicing the new math standards. To practice peace-making requires being peaceful and requires teachers, students, and administrators to go within and be calm and peaceful. As the new math standards ask students to re-conceptualize their understanding of math, so also we, students, administrators, teachers and staff alike need to work creatively on our internal fitness, our understanding of our internal emotional functioning. This is a never-ending process, one that is required if we are to get beyond our reactive reliance on control of students through detentions, suspensions, and expulsions to solve problems as they arise in schools. This process requires mutuality, or as Fischer puts it, “dealing with others is dealing with ourselves dealing with others” (Fischer 2013, p. 98).

Conclusion

We at RSVP see restorative justice as a human right. It is a secular, ethical approach to conflict prevention and resolution. It is not just another program that comes in a box—it represents a paradigm shift in school discipline that implements systemic change. It requires the dismantling of old power and control ways of interacting. There is no them and us. We are all entitled to love and understanding. Our young scholars deserve to be treated with kindness and dignity. This way

we all learn from each other. We now know that to educate requires much more than cognitive learning, it requires social and emotional learning to be initiated and developed. The brain is a thinking and feeling organ. We need to learn to ask the right questions, to model respect, and to become the peaceful person we expect our students to be and become. This is not a teacher issue, but a whole school, and neighborhood issue. Neighborhoods are not simply important, they reflect the urgent need for change.

Just as cognitive learning is a lifetime endeavor, so also is social, emotional and inner peaceful learning. A school culture that values curiosity, critical thinking, and the promotion of a respectful, caring and compassionate environment is a culture that is prepared to teach the whole student, or in the words of the UN Convention on the Rights of the Child: “States Parties shall take all appropriate measures to ensure that school discipline is administered in a manner consistent with the child’s human dignity....” (Human Rights Resource Center and Minnesota Advocates for Human Rights, 2006, Article 28,2).

Education is the key to creating a peaceful world. We must approach this endeavor with the same “fierce urgency of now” that Dr. King wrote about a half a century ago (Gomez, 2017). We cannot afford the same gradualism that Dr. King opposed, nor can we afford to keep saying it is “too late.”

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Examining Cultural Mental Health Care Barriers Among Latinos

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Abstract: The proliferation of the Latino population in the United States portends the urgency to understand their mental health care needs. It is well documented that Latinos are the largest ethnic minority group in this country, yet Latinos are the least likely to utilize mental health care services. This paper identifies and examines cultural barriers and current practices that may affect mental health care service utilization among Latinos. It presents a discussion and conclusion and implications to enhance cultural sensitivity in education and training for the next generation of mental health care practitioners.

Key Words: Latino, mental health, barriers, disparities, education

Introduction

Numerous studies have attempted to understand the underutilization of mental health care among Latinos (Cabassa et al., 2014; Keyes et al., 2012; SAMHSA, 2015). These studies have identified language, socioeconomic status and/or income, and health insurance as some of the barriers to accessing mental health care. More recent research shows that culturally related factors are crucial determinants of the help-seeking behaviors amongst Latinos. This manuscript attempts to add to the knowledge base surrounding terminology, informal care, and other cultural concepts that play a role in Latinos' behavioral health by documenting and exploring cultural factors that will be critical as the Latino population continues to grow. In addition, the disconnection between mental health service delivery and the Latino community also needs attention. This manuscript provides insights into how practitioners and educational institutions can better serve Latino clients. It is important to note that not all Latinos share the same experiences of mental distress; however, the authors feel that the content in this manuscript is worth documenting as these experiences are prevalent in many Latino communities, especially along the United States/Mexico border.

Ethnic Self-Identifying Terminology

The terms *Latino/a* and *Hispanic* have received growing attention due to the historical and political contexts that are rooted in each of the terms (Alcoff, 2005; Delgado-Romero, 2001; Velazquez, 2006). For example, the term *Hispanic* has been seen as emphasizing White European heritage with regard to the harming or neglect of indigenous, slave, mixed (*mestizo*), and non-European heritage (Delgado-Romero, 2001). The Spanish term *Latino/a*, on the other hand, has

been seen as a more politically progressive term, as it refers to individuals derived from Latin American countries that once belonged to Europe (Delgado-Romero, 2001). According to Alcoff (2005), self-named Latinos have criticized the term *Hispanic* for more than 35 years, stating that it receives more Anglo approval and is more widely accepted by the middle-class. The debate about the background and meaning of both terms is noted in the *Los Angeles Times*' decision to completely omit the term *Hispanic* from its newspaper (Alcoff, 2005). Both terms will be used interchangeably in this manuscript.

Latino Demographics

According to the Pew Research Center, the U.S. Latino population increased 2.1% to an estimated 54 million (as of July 1, 2013) in just one year (Brown, 2014). Estimates project that, by July 2050, Latinos will make up almost one-fourth of the U.S. population (U.S. Census Bureau, 2012). The shifting rise of Latinos in the United States, also referred to as the “Latino Nativity Shift” by the Pew Research Center, has been attributed to the growing number of Latino children who are born in the United States (Krogstad & Lopez, 2014). The states with the largest Latino populations are New Mexico, 972,000 (47%); California, 14,358,000 (38%); Texas, 9,794,000 (38%); Arizona, 1,950,000 (30%); Nevada, 738,000 (27%); Florida, 4,354,000 (23%); Colorado, 1,071,000 (21%); New York, 3,497,000 (18%); and New Jersey, 1,599,000 (18%); Chicago, with 2,078,000 Latinos (16%), has a similarly high number of Latinos (Pew Research Center, 2015).

Economic Costs of Mental Illness

According to the Centers for Medicare and Medicaid Services (2015), approximately 15% of all Medicare fee-for-service beneficiaries had a depression diagnosis in 2012. These beneficiaries included American Indian/Alaska Natives (approximately 17%), Latinos (16%), non-Latino Whites (15.5%), Black/African Americans (14%), and Asian/Pacific Islanders (7.5%). The report does not give an actual dollar amount associated with the costs, although Insel (2008) estimated the nationwide economic costs of mental illness in the United States to be approximately \$193.2 billion in lost earnings per year. More current financial numbers project lost earnings and public disability insurance payments associated with mental illness to be approximately \$467 billion in the United States in 2012 (National Institute of Mental Health, 2015).

Behavioral Health Barriers/Underutilization

Key studies conducted in previous decades have found that Latinos have a very low rate of utilizing mental health care. In 2009, the National Survey on Drug Use and Health (NSDUH) found that Latinos utilized mental health care services less frequently than African Americans and Whites (SAMHSA, 2010). Cabassa, Zayas, and Hansen (2006) reviewed seven epidemiological studies and concluded that Latino adults were less likely to seek formal mental health care compared to White adults. Research supports the fact that disparities exist in health and health care utilization between Latinos and Whites, especially in medical conditions such as psychiatric disorders (Keyes et al., 2012).

It is critical that the underutilization of mental health care by Latinos be examined as explanations for this underutilization have not been substantial. Some disparities in such underutilization have been explained by financial and health insurance reasons (Keyes et al., 2011). To better explain why Latinos tend to underutilize mental health services, Keyes et al. (2011) conducted a survey that examined the degree to which markers of immigrant adaptation, such as only speaking Spanish and stronger ethnic identities, affect mental health service

experiences. The researchers interviewed 6,359 Latino participants using the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), which is a nationally representative face-to-face survey of only residents in the United States (U.S). Keyes et al. (2011) found that “greater levels of Latino ethnic identity, the use of Spanish language, and less time living in the U.S.” predicted a lower use of mental health services for some mood disorders, even if the Latino individuals had medical insurance, some income, or if the severity of symptoms was higher (p. 51). They also noted that Latinos are more likely to distrust the medical community due to past experiences of discriminatory treatment or ineffective care, as well as cultural stigmas and attitudes toward psychiatric disorders and mental health services. It is, therefore, important to examine possible explanations or causes of the low rate of utilization of mental health care by Latinos.

Latino Cultural Factors

According to Guarnaccia, Martinez and Acosta (2005), in many Latino communities, mental illness is associated with people suffering from being “loco” or crazy. Being “loco” has strong negative implications. It implies that the person is often dangerous to the community and experiencing an incurable disease that can lead to feelings of helplessness and a failure to seek help. In many Latino communities, mental or emotional problems can be attributed to experiences out of their control, such as *fatalismo* (supernatural phenomena). Such phenomena are *susto* (shock/fright), *mal de ojo* (evil eye), *nervios* (nerves/anxiety), *espanto* (spooked), and *miedo* (fear), which have very similar symptoms of diagnosable mental disorders (American Psychiatric Association, 2005; Baer et al., 2003; Guarnaccia et al., 2003; Kramer, Guarnaccia, Resendez, & Frances, 2009).

Many times, Latinos may state that they are experiencing *susto* or *nervios* and grumble about somatic complaints. According to the American Psychiatric Association (2005), *nervios* is a common idiom of distress among Latinos, and *susto* is a culture-bound syndrome that includes psychological and somatic symptoms (p. 7). Barrio, Yamada, Hough, Hawthorne, and Jeste (2003) reported a higher rate of somatic symptoms among Latino, compared to White and African-American, patients diagnosed with schizophrenia. Racial and ethnic minority groups are underserved by the mental health system due to the common mistake of mental health practitioners failing to accurately “read relevant cultural cues” of their mental illness (Dow, 2011, p.145). According to Dow, it is important for mental health professionals to learn the beliefs and perceptions minority ethnic individuals have surrounding mental illness from a cultural context. Dow added that this is important for working with ethnic minority individuals because “people from different cultures explain [mental] illness differently; therefore, their way of dealing with it is different too” (p. 176). Furthermore, “the manner in which individuals present their symptoms, how they communicate about their health problems, and the decisions they make about health care are all influenced by cultural beliefs and values concerning [illness]” (p. 177). It is therefore important to understand the cultural variables that may affect or impact the way ethnic minority individuals, such as Latinos, perceive mental health services and treatments, such as gender constructivism’s *machismo* (regarding men) and *marianismo* (regarding women), *familismo* (family-oriented), *personalismo* (personable-oriented), *individualismo* (self and/or individualistic focus), and *fatalismo* (fate-oriented) (Paniagua, 2005).

Machismo and Marianismo

According to Paniagua (2005), *machismo* can be defined by Latino males’ belief that

respeto (respect) should be given to them through the submission of people such as their wife or children. *Machismo* is also defined by having physical strength, sexual attractiveness, masculinity, aggressiveness, and the ability to consume an excessive amount of alcohol without “getting drunk” (Paniagua, 2005). *Machismo* most often causes *marianismo*, which is defined by a woman’s expectation to be submissive, obedient, timid, sentimental, gentle, and virgins until marriage as well as to cook/clean/care for their children/husband (Paniagua, 2005).

Paniagua (2005) asserted that, when Latinos move from their country of origin, where *machismo* is more commonly accepted, to the United States, where *machismo* is not such a common normality, conflict may arise. Latino families that hold on to the qualities of *machismo* and *marianismo* are more likely to have conflicts within the family, such as “marital” or “child–father” conflicts (Paniagua, 2005). In terms of engaging Latino families, Aviera (2002) suggested that a practitioner always assess the hierarchical structure of the client’s family. When working with families, it is important to speak to the father—or other male considered to be the head of the household—during the treatment process as a way to engage the client and his/her family (Aviera, 2002; Paniagua, 2005).

Machismo also has positive characteristics and values. According to Englander, Yáñez, and Barney (2012), patriarchal characteristics such as “respect, generosity and machismo are also associated with responsible fatherhood” (p. 68). Unfortunately, the negative characteristics seem to be adopted more readily by the new generation of male Latinos. The combined practice of *machismo* and *marianismo* increase risky behaviors and jeopardize both physical and mental health development (Jezzini, 2013).

According to Jezzini (2013), *marianismo* is the principal predictor of depression in Latina women. Furthermore, Thompson (2014) stated that *marianismo* and *machismo* are barriers to the prevention of diseases such as colorectal cancer (CRC). A 2011 report from the National Center for Health Statistics reported that “47% of Latino respondents reported any colorectal cancer screening procedure compared to 59% of all adults, age 50–75 years, regardless of race” (p. 1) The author stated that a qualitative study investigated the influence of *machismo* on CRC screenings. The study reported that Mexican men felt that getting a colonoscopy was “embarrassing” (p. 4). Likewise, Latino women who displayed behaviors associated with *marianismo* were not able to make their own decisions; instead, they were more likely to be submissive.

Familismo

According to Mulvaney-Day, Alegría, and Sribney (2007), family is a strong support system within the Latino population. *Familismo* is an important value for Latino individuals and can be defined as the high importance that is placed on family (Caballero, 2011). Latinos rely heavily on their families in order to get their psychological, social, and emotional needs met; they also seek advice and direction from their families during important times in their lives or when making important life decisions (Caballero, 2011). Conally, Wedemeyer, and Smith (2013) asserted that Latino individuals place their families’ needs above their own individualistic needs because aiding each other is considered an important moral responsibility. Paniagua (2005) added that, when a mental health practitioner attempts to begin an assessment or treatment process without the consideration of their Latino client’s nuclear or extended family, the service delivery may result in failure. This is due to the fact that Latino individuals most often “turn to” and “rely on” their family during times of stress or difficulties in their lives (Organista, 2000; Paniagua, 2005). Usually when issues arise within *la familia* (the family), especially mental health issues, these are dealt with privately within the family and remain private. This demonstrates the strong

commitment and loyalty that members in the family have toward *la familia*. By considering *familismo*, practitioners can understand some potential barriers to treatment, such as if a family member disapproves of the treatment; it can also offer the practitioner a tool to better motivate the client and his/her family during the treatment process (Interian & Diaz-Martinez, 2007). By utilizing culturally adaptive techniques that are accepted by family members involved in the treatment process of an individual family member or the entire family altogether, the practitioner can develop a strong therapeutic alliance between the practitioner and the client (Añez, Paris, Bedregal, Davidson, & Grilo, 2005; Organista, 2000).

Personalismo

Personalismo is defined as the relationship between a Latino client and the people with whom he or she has contact, which can include family members, individuals in society, or even a service provider (Añez et al., 2005). A form of *personalismo* occurs in the act of accepting gifts, which occurs often when a Latino individual is trying to express gratitude and generosity (Paniagua, 2005). If a gift is not accepted by the intended recipient, Latino individuals may have hurt feelings. *Personalismo* is often promoted and encouraged when providing services to Latino individuals and families. Some researchers state that Latino clients can perceive the distance between them and their practitioner when they feel that there is a lack of warmth, which is caused when a hug is not accepted, when shaking hands, or when the practitioner avoids sharing basic and non-intimate personal information, such as food preferences (Guarnaccia & Martinez, 2003; Paniagua, 2005). Actions of *personalismo* may include appropriate touching of clients when a greeting takes place, sharing stories, or exchanging gifts. *Personalismo* presents a contradictory scenario to the policies and procedures of many mental health agencies. In fact, many of these institutions have policies that prohibit such actions as warranted by *personalismo*.

Individualismo

In the Latino community, an emphasis is placed on the person's *individualismo*, or individualism. *Individualismo* emphasizes the unique set of qualities each Latino individual has in a variety of settings, whether in the family or community (Paniagua, 2005). *Individualismo* states that a person's uniqueness is important and is essential in obtaining cooperation with others, rather than competition within the Latino community (Paniagua, 2005). For example, *individualismo* can be found in the instance of mothers in the Latino community being regarded as amazing cooks, which therefore becomes a commonly positive quality for most mothers in the community. During the treatment process, mental health practitioners should explore *individualismo* because if Latino clients perceive that they are being asked to change who they are, their sense of *individualismo* may be jeopardized (Paniagua, 2005).

Fatalismo

Fatalismo is a strong belief some Latino individuals have regarding the occurrence of problems because they believe they are determined by fate and/or destiny and, as such, are out of their control (Interian & Diaz-Martinez, 2007). *Fatalismo* often implies a sense of vulnerability and lack of control when such adverse events occur, which are also seen as unchangeable (Interian & Diaz-Martinez, 2007; Paniagua, 2005). Religion often plays a role in the belief of *fatalismo*, such as when Latino clients reference *si dios quiere* ("if God wills") and view their problems as part of God's will (Interian & Diaz-Martinez, 2007). It is important for mental health practitioners explore any beliefs Latino clients may have in regard to *fatalism*, such as *brujeria* (witchcraft),

envidia (envy), and *mal de ojo* (evil eye) (Paniagua, 2005).

According to Paniagua (2005), some Latino clients will not admit to their religious or folk beliefs in the first session, but it is important for the mental health practitioner to explore this subject in order to understand the client. Latino clients may believe that prayers will cure a physical or mental problem and may seek help from a priest, minister, *espiritista* (spiritual healer), *el curandero* (male folk healer), *la curandera* (female folk healer), or *el/la brujo/a* (witch doctor) in order to solve their physical or mental distress (Paniagua, 2005). Most Latino clients feel more comfortable reverting to these practices because have been used and passed down from previous generations in their families. It is suggested that practitioners assess and incorporate their Latino clients' religion, if applicable, during the engagement phase of the treatment process because religion may play an important role in how the client views mental illness and the practitioner altogether (Gallardo, 2012; Paniagua, 2005). According to Paniagua (2005), the practitioner should modify their therapeutic strategies during the engagement phase so that they are aligned with the client's belief system; if practitioners cannot work from both a scientific and folk belief perspective, they should refer the client out.

Language

Psychotherapy may be viewed as talk therapy, and its success depends on clients' ability to articulate their feelings (Preciado & Henry, 1997). As a result, language is a significant factor for providing effective mental health care. According to Vega and Alegria (2001), the language barrier plays a significant role in the underutilization of mental health care by Latinos, and this barrier appears to have no solution in sight as the number of Spanish-speaking people continues to increase while the number of bilingual mental health professionals remains comparatively low. A census brief in 2003 indicated that "Spanish speakers grew by about 60% and Spanish continued to be the non-English language most frequently spoken at home in the United States from 1990 to 2000" (Shin & Brunno, 2003, p. 3). In fact, approximately eight million Spanish-speaking individuals have poor English-speaking skills—a number that will increase with the expanding Spanish-speaking population (Shin & Brunno, 2003). Having a poor English-speaking ability presents challenges to Latinos seeking mental health care services. The inability to communicate their service or treatment needs results in a greater chance of dropping out of treatment programs. A study by Laval, Gomez, and Ruiz (1990) supported the view that Spanish-speaking, monolingual clients who have communication difficulties with English-speaking, monolingual mental health professionals tend to drop out early from treatment or may not seek treatment altogether (Alegria et al, 2002).

Current Practices

Many mental health professionals may diagnose a client without ever taking into consideration the client's culture (Barrera & Jordan, 2011). This can lead to serious consequences and can exacerbate the symptoms a client is experiencing. For example, it would not be surprising to hear Latino clients state that they have had some close encounter with *La Virgen* (the Virgin Mary) or some other saint or prophet that is venerated within their respective religion. According to Diller (2014), the majority of Latinos are Catholic, and it is not uncommon to have an altar in their homes. The altar often has an image of the Virgin Mary, a crucifix, a rosary, and/or candles. According to Diller (2014), Catholicism is sometimes mixed with African beliefs. If a mental health professional does not recognize that *La Virgen* is seen as a powerful and influential religious icon, this may lead to a serious misdiagnosis and possibly enhance or create false symptoms of

mental illness.

Understanding the language is also an important factor in working with Latinos because it allows the practitioner to understand how Latino individuals perceive or interpret words. For example, if a Mexican client with paranoid schizophrenia attends therapy and states that she/he is sure that somebody put a curse on them by using *brujeria* (witchcraft), the practitioner must recognize that this is related to the patient's cultural beliefs. The failure to recognize this could lead to a disconnect between the Latino client and the practitioner.

It is vital that mental health professionals take cultural beliefs into account when working with Latinos as these beliefs have been held for many years and have been a significant factor in the low use rates of mental health services by Latinos (Torrey, 1972).

Discussion

Most literature addresses the use of folk healers for mental health care as an alternative. However, the author refers to this as informal care as opposed to alternative healers as many Latinos are descendants of civilizations in which the use of folk healers was not the alternative, but rather the standard. Latinos may seek treatment for their symptoms of mental distress by visiting a *curandero* (folk healer) or *esperitista* (spiritual healer). These individuals perform folk healing using various methods of treatments that include "herbs, massage, diets, advice, prayer, suggestion, and persuasion" (Acosta & Evans, 1982, p. 65). They are also able to provide mental health care even though it is different than that provided through the Western/traditional mental health care system. Furthermore, *curanderos* have a long history of working with Latinos, in particular Mexican Americans. According to Galarraga (2007), folk medicine has a long history in the Latino culture. For example, *curanderos* and *santeros* are extensively consulted by the first Latino generation. The *curanderos* use natural medicine such as plants and herbs to cure illnesses and conduct spiritual rituals of "limpias" (cleaning) (p. 3); meanwhile, *santeros* use the power of saints to heal and "prescribe herbs, ointments, lighting of candles for saints, incense and Florida water that can be bought in a spiritual pharmacy" to have major effect (p. 3). *Curanderos* have established trusting relationships with the Latino community and, as a result, are better able to understand cultural phenomena such as *nervios* (nerves), *susto* (shock, fright), and *mal de ojo* (evil eye). Cuellar, Arnold, and Gonzalez (1995) reported that making use of folk healers can lead to the underutilization of mental health care. The U.S. Department of Health and Human Services (2011) found that some studies have shown as many as 44% of the respondents use "*curanderos* or other traditional healers for their general and mental health care" (p. 22). A study conducted in the Rio Grande Valley, Texas (n=230) by Barrera (2010) found that 25% of Mexican American participants had been treated by a *curandero* in the past. Other cultural characteristics of *personalismo* are *respeto* (respect), *dignidad* (dignity), and *confianza* (trustworthiness). Respect is an important aspect of the Latino culture because it involves associating elders with wisdom, from which *consejos* (advice) are usually sought. These occurrences can make it challenging for elders to seek mental health treatment, especially if mental health professionals are younger than older Latino clients. It is not uncommon for them to express themselves by saying *cómo me van a decir a mí de la vida, si yo ya viví* ("how are they going to tell me about life, if I have already lived life"), indicating that young people are incapable of being wise enough to give *consejos* (advice). According to Anez et al. (2005), the rule of thumb for any initial contact with a Latino and/or Latino client is to address the client formally until told otherwise, as a *falta de respeto*, or act of disrespect, is considered offensive and can lead to a negative outcome, such as the client not returning for services.

Many Latinos have a strong sense of *dignidad* (pride). As a result, Latinos may find themselves being too proud to seek help as it would jeopardize their dignity. In the meantime, they repress their symptoms of mental illness and do not seek mental health care. *Confianza* (trust) can also affect the likelihood that they will seek mental health care. If Latinos are unable to establish a trusting relationship with mental health professionals, they are unlikely to return for treatment and will possibly forfeit any future attempts to seek help. Therefore, it is crucial that mental health professionals who provide mental health care to Latinos understand these cultural concepts, especially as many social work programs do not provide adequate training or follow a curriculum to work with Latino clients. Most textbooks that are used as the primary text for a course are written by non-minority authors who include little emphasis on the cultural elements among Latino clients. Furthermore, general, academic curricula provide little, if any, cultural training; when it is offered, it is a one-day workshop in which the participants are then assumed to have the necessary skills to be competent in working with Latino clients. This has the potential to do more harm as participants may then think that they have all of the necessary skills to work with Latino clients and seek no further education or training.

Being culturally competent is a lifelong learning experience. Gallegos (1982) first introduced the definition of being competent to work with different ethnicities in social work education and defined it as “a set of procedures and activities to be used in acquiring culturally relevant insights into the problems of diverse clients and the means of applying such insights to the development of intervention strategies that are culturally appropriate for these clients” (p. 4). The term *cultural competence* has since had various definitions, some including an actual set of standards. The National Association of Social Workers (NASW) defined cultural competence as “a set of congruent behaviors, attitudes, and policies that come together in a system or agency or among professionals and enable the system, agency, or professionals to work effectively in cross-cultural situations” (2000, p. 61). Furthermore, Cross, Bazron, Dennis, Isaacs, and Towards (1989) see cultural competence falling along a negative (cultural destructiveness) to positive (cultural proficiency) continuum and define it as “a set of cultural behavior and attitudes integrated into the practice methods of system, agency, or its professionals that enables them to work effectively in cross cultural situations” (p. 13).

Conclusion and Implications

The growing number of Latinos in the United States poses a major challenge for all mental health professionals, including educational institutions. Therefore, it is imperative that the field of social work play a vital role in finding creative and feasible solutions to the behavioral health disparities that exist among Latinos. For example, mental health practitioners can utilize *dichos* when trying to engage their Latino clients through *personalismo*. *Dichos* are analogies, proverbs, or popular sayings that are used as a common means of communication in the Spanish language (Anez et al., 2005). In Latino communities, *dichos* are a way of spreading socialization patterns so that values such as courage, responsibility, and traditions are passed on from generation to generation (Interian & Diaz-Martinez, 2007). Because communication patterns amongst the Latino communities sometimes occur indirectly, *dichos* provide an avenue to introduce advice and feedback without offending the individual (Anez et al., 2005; Interian & Diaz-Martinez, 2007). The use of *dichos* with Latino clients can be effective, especially when engaging first-generation clients (Anez et al., 2005; Interian & Diaz-Martinez, 2007), and can be utilized throughout the treatment process in the beginning, to validate the client’s feelings and establish rapport; midway, to provide feedback, suggestions, or make a point; and at termination, to help draw conclusions or

perspectives. *Personalismo* becomes an important component of the established relationship between a Latino client and the therapist. For example, a Latino client may utilize *personalismo* when seeking to establish a relationship with the therapist by getting to know the therapist, such as knowing what hobbies or music he/she enjoys, rather than wanting to know what professional credentials the therapist may have (Paniagua, 2005). A mental health practitioner can utilize *personalismo* as a tool in order to engage the Latino client and build *confianza*, which is the level of trust that may lead to deeper disclosure in treatment (Arredondo, Gallardo-Cooper, Delgado-Romero, & Zapata, 2014). By using *personalismo* as a tool, a practitioner is able to enhance the *intimidad*, or intimacy, in order to make the Latino client feel comfortable in addressing difficult themes during the treatment process (Arredondo et al., 2014). The following implications are also recommended:

- 1) The knowledge base of this manuscript should be included in social work curriculum, especially in geographical areas where there is a large Latino population.
- 2) Social work programs need to attract more bilingual/bicultural educators into their master's and doctoral programs.
- 3) Mandatory trainings should focus on Latino behavioral health cultural factors as part of the clinical licensure requirements for social work practitioners who practice in an area of high population of Latinos.

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High School Biology in the Age of the Next Generation Science Standards: A Student-Centered Approach

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Abstract: The article describes a biology teacher's approach to inquiry-based instruction grounded in a sociocultural learning perspective. The course designed by the Biology Teacher includes references to the literature and epistemic practice-based routines and procedures. The urban students in this study integrate the practices to design an investigation to solve a problem with soil quality. Specific details describe the epistemic practices enacted by the students and their responses to the learning experience. The study illustrates how the Biology Teacher used the students' culture, experiences and knowledge to promote meaningful science practice related to the lives of the students. The study was conducted in an urban environment; however, approaches are conducive to science instruction in all NGSS classrooms.

Introduction

Reform in science education has occurred in response to increasing demands for citizens who can solve practical health, political and social problems using science (Feinstein, Allen, & Jenkins, 2013). Beginning in the 1980s the demands for a scientific literate populous focused on preparing students to become science majors for colleges and universities, building student confidence, and developing students' appreciation for the usefulness of science. Since then, there has been a push toward instructional practices that facilitate science knowledge and skills. The National Research Council (2012) calls attention to scientific unifying concepts and processes to accomplish this goal. Numerous studies in recent years support replacing the cookbook style procedures of science of the past with more inquiry-based learning (Weaver, 1998, Hart et.al, 2000). Inquiry-based instruction is an important science teaching strategy that involves supporting students in investigating questions and using data as evidence to answer questions (Caps & Crawford, 2013). Moreover, inquiry-based instruction provides a context to begin learning about the nature of scientific knowledge (Schwartz et.al. 2004).

The Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Idea, encourages teachers to emphasize the integration of core science concepts and has operationalized inquiry into eight science and engineering practices. The core concepts and practices are intended to be taught together in a coherent learning experience where students can

make meaningful connections between and among direct experiences with science and engineering practices and language arts skills including reading, writing, speaking and listening (Pearson, Moje, Greenleaf, 2010).

This approach to science teaching has shown promise with improving academic achievement of students, particularly female and minority students (Gormally, Brickman, Hallar and Armstrong, 2009; Lamoureux, Beheshti, Cole, and Abuhimed, 2014). Unfortunately, many urban students have limited experiences with inquiry-based instruction and this is partly due to teacher preparation and quality (Anderson, 2007). As of 2012, 69% of science teachers in affluent schools had advanced degree versus 49% in schools characterized by students living at the poverty line (National Science Board, *Science and Engineering Indicators*). In addition, advanced secondary school courses, such as physics and calculus, are offered at lower rates in schools that serve African American and Latino students.

The focus of this study was to determine how one urban biology teacher in Southern California attempted to offer high quality, inquiry-based science instruction to urban African American and Latino students. Specifically, this paper examines one teacher's approach to using inquiry-based instruction and a sociocultural perspective of learning to create a student centered approach for improving science academic achievement.

Theoretical Framework for NGSS

Informed by the previous work on inquiry-based science instruction and what is known of typical school science learning experiences, two science practices were designed for urban students to engage in inquiry-- *Text Study and the Know, Question, Hypotheses, Learned (KQHL)*. The practices provide students access to science learning by combining aspects of sociocultural learning theory as articulated by Hollins (2011) and by negotiating epistemologies as described by Sandoval (2004). By combining Hollins focused inquiry and directed observation, with Sandoval's concept of epistemologies needed for science learning, three principles for science academic achievement were enacted in this study: 1) student-centered science instruction, 2) student apprenticeship in biology, and 3) explicit teachings in scientific methodology.

The first two principles, *student-centered science instruction and student apprenticeship in biology*, allowed students to use their experiences and social and cultural tools to make sense of science and engineering practices (Hollins, 2008; Brown and Ryoo, 2008; Rivet and Krajcik, 2007). Participating in an apprenticeship in biology means that students learn professional practices (at a developmentally appropriate levels) by using knowledge and skills together in a specific context. Students ask questions, use tools of science, learn professional norms for solving scientific problems and engage in the same habits of mind of scientists (Hollins, 2011; Wu & Wu, 2010; Lehre, Schauble & Lucas, 2008).

The theoretical construct underlying the student centered approach is also related to Hollins (2012) student centered, teaching and learning. This construct is based on research conducted in an urban school setting that addressed student English language arts achievement. When students' attributes such as their culture, language and community were recognized and integrated into the instructional delivery, student performance increased. Examples given were the Algebra Project (Moses, Kamii, Swap, and Howard, 1989) where student learning was built upon students' learning preferences and strengths derived from their cultural and experiential backgrounds; and the Foxfire Approach (Wigginton, 1977), where Appalachian students were encouraged to link their community interest to language arts, as a result academic achievement improved by allow students to engage as historians and journalists for documenting their Appalachian culture. These

instructional mechanisms provided students opportunities to actively participate in their learning and also provided voice to student ideas, concerns and questions in an affirmative manner. In the current study, the teacher grounded the learning in community based problems that were meaningful to their lives. Students were allowed to use their own problem solving approaches while integrating the routines and processes of the discipline for science learning.

In considering how to ground urban science teaching with the Hollins' student-centered approach, we recognized that urban students have not had exposure to consistent quality or frequency of inquiry-based learning opportunities, and have experienced cookie-cutter versions of the scientific method (Kahle, Meece, and Scantebury, 2000). The biology instructor in this study sought to address this problem by representing investigation and science text negotiation as processes students could easily use when prompted to do so in science problems or tasks. Science problems and tasks were constructed to reflect students' interests, values, prior knowledge and experiences. These contextualized problems and tasks attempted to link students' prior knowledge and experiences to science and engineering practices. Problems and tasks integrated with personal experience were used to anchor learning for units and lesson plans. The focus was to create a series of meaningful coherent learning experiences anchored by scenarios that would prompt students to engage in science and engineering practices in meaningful ways.

The third principle is teaching explicitly about the diversity of scientific methodologies (Sandoval, 2007). Introducing inquiry as a series of methodologies that facilitate the ability to distinguish ideas from experimental design, to test ideas, to use evidence to support claims and to communicate information that improves students' scientific decision making (Chinn, Betina, & Malhotra, 2001). Students who are given explicit instruction and support for engaging different methodologies develop epistemologies that are aligned with the discipline. These epistemic practices are processes and routines, grounded in the discipline norms of the science profession, used to teach content over time. Because the literature indicates that students, specifically urban students, do not experience quality inquiry-based instruction (Junlei, L., David, K., & Siler, S., 2006; Rudolph, 2005), the teacher in this study used epistemic practices to involve students in explicitly discussing prior knowledge regarding ideas, linking evidence to claims, the testability of hypotheses, and the collection, organization and analysis of data. In addition, the teacher wanted students to make connections between different forms of science methods and how forms are iterative and integrated depending on the context of the scenario. For example, students identified and described methods presented in a text and were prompted to think about how they could modify the method to test their own hypotheses. Students were also taught to use the text to support or reject claims made from student-derived evidence. The goal was to understand the function of each science methodology (investigation and science text negotiation) and to understand how forms used together help construct scientific knowledge, understanding and skills. Epistemic practices, used as science and engineering routines helped guide students through the complex way of knowing and doing, and to improve science academic achievement.

Making sense of how to engage urban students in inquiry-based learning to improve academic achievement was the emphasis of the study. Considerations included the idea that urban students construct their school experiences using social and cultural tools from their homes and the community. Using cultural/social tools and epistemic practices in authentic ways support deep and durable student involvement in science. Hollins (2011) described a sociocultural apprenticeship approach to learning how to teach that involved two interrelated teaching experiences, *focused inquiry*, and *directed observation*. *Focused inquiry* into a practice allows students to use tools and clarify any gaps in understanding. *Directed observation* is the purposeful

attention to a particular skill demonstrated by a skillful practitioner. Together, these two processes support academic achievement.

Hollins' approach to learning how to teach was applied to the contextualization of the epistemic practices in this study. Engaging in the epistemic practices was viewed as an apprenticeship where students were provided with culturally appropriate science scenarios or activities that prompted them to read a text, plan an investigation, observe a phenomenon, or attend to a demonstration. These anchoring activities segued into subsequent learning experiences that provided support, to engage in epistemic practices and for students to answer essential lesson level questions. At the end of the unit, students were expected to explain the anchoring phenomenon, answer the lesson level essential questions, overall unit driving questions, and to present arguments.

The study tracked growth of two biology students' understanding of seedling growth as they learned content using epistemic practices. The interest was both in the students' developing understanding of inquiry-based reasoning and their understanding of collective problem-solving. Biology is a domain that requires students to deploy and coordinate extended chains of reasoning that entail complex forms of causality (Grotzer & Basca, 2003; Leach Driver, Scott, & Wood-Robinson, 1996). Typically, high school students are capable of coordinating the relations that constitute inquiry-based learning, such as cause and effect and energy and matter, and can sustain self-regulated inquiry in this domain (Eilam, 2002). However, the students in this study have experienced limited inquiry-based learning experiences over extended periods of time. Therefore, this study is a suitable test/analysis for investigation of the prospective effects of sustained systematic inquiry-based instruction.

Research Question

Given our theoretical position, this study sought to explore the primary question: What effect does teaching epistemic practices through the use of *focused inquiry* and *directed observation* have on student science learning? The findings from this study will help design science classroom activities that support students' understandings of how scientific knowledge is constructed through inquiry.

Methods

Setting

This study was conducted at a Southern California Urban High School. Southern California Urban High School (SCUHS) is a 9th-12th grade comprehensive school in Los Angeles, CA with an average population of 2216 student. Historically the school consisted of a majority of African American students (over 80%), the study population has stabilized in recent years to 55% African American and 45% Latino. The Latino population primarily come from Mexico, with a significant percentage from a variety of Central American countries. Over 80% of students participate in the free or reduced lunch program.

Participants

One hundred and sixteen 9th and 10th grade students from five biology courses participated in the study (n = 64 girls and 52 boys; average age 15 years). The students had a range of academic abilities and many of the students were designated English Language Learners. Ms. Smith, who had been teaching biology in high schools for more than 12 years, taught all classes. Ms. Smith received a B.S. degree in biology and held a master's degree in school psychology and a Doctorate

in Education. Ms. Smith has actively participated in inquiry-based professional development activities characterized by instructors modeling instructional strategies, providing resources, kits, and recent scientific information from the literature regarding the shift in science teaching that the NGSS represents.

Design

Two participants were selected from the population of 9th/10th grade biology students to describe the inquiry-based learning experiences of the study. The two students represented proficient and development levels of performance using the epistemic practices. Ms. Smith was the classroom teacher, responsible for instruction and introduced *focused inquiry*, and *directed observation* in her instructional approach.

Activities

The challenge for this research was to identify ways to coordinate certain aspects of inquiry-based learning that were aligned with students' development, and represented three dimension inquiry found in the *Framework for K-12 Science Education*. The coordination tools developed by Ms. Smith were designed to make the processes of investigation and negotiation of text accessible for students and teach the professional norms of the subject matter. These coordinated processes were delivered through Ms. Smith's epistemic practices.

Epistemic Practices

Although investigation and the negotiation text are activities commonly found in science classrooms, these activities usually direct students in a step-by-step fashion leading to known answers and results (National Research Council, 2008). The intent is probably to make inquiry "student-proof" because teachers feel uncomfortable negotiating student failure. At the same time, this recipe-like approach is a distortion of scientific practice (Lehre, 2008). In contrast, students are expected to learn to ask questions, build and revise systems for investigation, invent measures, construct data representations that are convincing to other investigators, and decide what conclusions are warranted and how much trust they should be given (National Research Council, 2007). To coordinate these activities, Ms. Smith designed two epistemic practices, the text-study and *KQHL*. Each activity involved multiple science and engineering practices recommended by the national science framework such as asking question, designing investigations, and communicating findings. Because students had limited prior experience in inquiry-based learning, it was difficult at first for students to engage in tasks without the teacher's guidance. To help students learn, Ms. Smith provided scaffolds and guidance through clarifying and facilitative questions, demonstrations, one-on-one interaction and by the use of strategic small groups.

The text-study epistemic practice included (a) requirements for developing research questions to guide inquiry into the different types of text students were exposed to (textbook, laboratory protocols, supplemental science readings), (b) a list of research methods, (c) examples of data sources and (d) instructions on how to write the; data analysis; findings; and summary of a science text. The findings portion of the text-study consisted of the answers to the research questions that students were required to write at the beginning of the process. During the focused inquiry, students were encouraged to use their socio-cultural background and past everyday science experiences to make sense of the tools (question frames, rubrics, data sources, and research methods lists). It was stressed that this process will not change as the year progresses, only the content of the process changed. Using this format the urban students were expected to acquire

important prerequisite skills for science literacy development. Allowing the students to express their knowledge, in their own way, granted them access to learning science content.

For the investigation of the epistemic practice, students were asked to share what they know about a topic, pursue their own questions, and engage in planning and implementing investigations based on what they know. The investigative process was supported by using a scaffold that mirrors the *text-study*, the *KQHL*. The *KQHL* is likened to the KWL but there are significant changes. First, students work together in research groups where they highlight any background knowledge needed to identify aspects of the topic that can be measured. Then, students consolidate this information under the “K” section, much like the “K” section of a KWL. Second, students use the same question frames from the text-study process to construct 5 research questions (Q) that can be used to create an hypotheses, or what the students want to learn about. The hypotheses are possible answers to a research question and are testable (H). Next, students set up their laboratory activity to test their hypothesis, collect their data and then organized the data for analysis. Students were then able to make claims about what they know from the laboratory experience and support what they know using components of the *text-study*. The claims were written under the “L” section of the *KQHL*, indicating what they learned. Finally, students were able to support or reject their hypotheses based on the analysis of the data and the support of their claims. When students were introduced to this process they examined (a) the instructions on how to share their experiences with their peers in the “K” section, (b) guidelines for constructing five questions about the laboratory topic, (c) how to choose a question from the previous step to formulate a hypothesis in the “if...then” statement format, (d) how to collect, organize and analyze data, (e) how to use data to support or reject a hypothesis, and (f) how to construct an argument by using information from the data analysis and supporting textual information from the text-study. This process was conducted for every laboratory activity.

The emphasis on text and investigation was intended to ensure that scientific reasoning and knowledge would be addressed in a coordinated manner. However, it was clear that employing the shift required to implement inquiry-based instruction, required shifting how science is taught. Hence, Ms. Smith initiated two forms of activities designed to realize a viable culture of scientific inquiry. She used *focused inquiry* and *directed observation* to teach and support the two epistemic practices.

Focused Inquiry

Ms. Smith solicited students’ questions, curiosities and discourse about the concepts and big ideas and coordinated discussions through epistemic practices. During *focused inquiry*, students examined: 1) the rubrics for the text-study and *KQHL*; 2) examined scaffolds that organized the processes of the practices; 3) completed student work from past courses; 4) the components of each practice; and 5) the relationship between epistemic practices (i.e. how similar the methods in the text are to the methods used for planning investigations). The elements of the practices are linked to students’ prior academic and social experiences with science.

Questions posed during *focused inquiry* such as, “Do we copy the subheadings of the text?”; and “How many questions do we need to ask in order to move on to the hypothesis?” represent the students’ concern with procedures for completing the assignments and receiving a “good grade.” Questions and discussions later in the year illustrated students’ focus on inventing measures, refining protocols to test hypotheses, and organizing and analyzing data. *Focused inquiry* was considered fruitful if discussions lead to students helping each other understand science concepts and protocols (“We are looking at cell division this week and it looks like we are

using microscopes again”) and if they resulted in empowering students to be self-regulatory (“We are engaged in a lab for this topic so we have to first discuss what we know and then pay attention the text this week to get ideas about how to investigate it”).

Students’ judgements about research questions, hypotheses, methodologies, were accompanied by similar discussions to identify, collect data and for analysis. These processes were coordinated in the text-study and *KQHL* routines and used across learning experience. Students eventually were able to initiate and engage in these processes on their own.

Directed Observation

The second activity used to operationalize inquiry was *direct observation*. During *direct observation*, students observed Ms. Smith demonstrate practices used to learn content. Students attended to: a) decision about when to choose a particular practice; b) knowledge needed to engage in the practices; c) scaffolds used to coordinate the practices; d) how the practices inform each other; and e) how to use the practices to make claims based on evidence. Students were prompted to discuss how they would use the text-study and *KQHL* to learn a concept. Directed observation was dominated by student-to-student and student-to-teacher discourse characterized by definitive statements, clarifying questions, cueing by teachers and peers, potential hypotheses and plans for testing hypotheses. For example, a team of students were taking inventory of the equipment needed to test their hypotheses concerning cells. As an approach, they proposed to use the microscope to determine the relative size of the cells, select a particular stain to see the cells, and reviewed the function and structure of the cells. However, as students discussed their plan, Ms. Smith interjected in regards to which tools were appropriate for certain types of testing as demonstrated in the following discussion:

Ms. Smith: O.K. I’ve now demonstrated the basic protocol for investigating cells this week. What types of questions do you think I can ask about cells?

Tyrone: You can ask whether or not the cells can move or not.

Elizabeth: I don’t know if you can do that, where are you going to get the cells?

David: Hold up, I’m still trying to think of questions...I think that you can use the microscope to see the cells move so I’m going to ask a question about that.

Ms. Smith: So, what I’m hearing is that I can test whether or not I can see cells move. What was the overarching question are we looking at this week (“How does cell structure determine function”)? And is that connected to the mobility of the cells?

Elizabeth: No. it is not connected to the question this week?

Ms. Smith: Are you sure? Where can we find information that can help us formulate good questions?

Elizabeth: You told us to go back to the text study

Ms. Smith: Right, where else can you go?

David: The textbook or the websites that you recommended...

Ms. Smith: Where on the *KQHL* do I record the questions we are creating?

Students were attending to the connection between methodologies for studying cells and the types of questions that could be investigated. The discussions served to clarify how the epistemic practices were used to learn the content and to increase student awareness of the epistemological relationship between questions, testing, and types of data collected.

One purpose for engaging students in *focused inquiry* and *directed observation* was to make inquiry-based instruction accessible to high school students without “watering” down the material. The opportunities for learning is positioned within a constructivist-sociocultural perspective with an emphasis on sharing experiences with fellow students, questioning, and engaging in science and engineering practices with careful guidance. The emphasis on accessible inquiry was atypical of urban high school science, and thus the practice was aimed at students’ science learning. By using *focused inquiry* and *directed observation* to deliver instruction, students were able to learn the epistemic practices first (*focused inquiry*) and then use them as skills to construct knowledge (*directed observation*). We also wanted to know more about how students reasoned about biology while using epistemic practices, to respond to the questions; What was the scope of their understanding? Would it be narrowly focused on the procedures of the epistemic practices or would student discourse and writing provide evidence of scientific reasoning and improved academic skills?

In summary, two teaching components addressed the following themes:

1. *focused inquiry*: What was the nature of the questions students asked when epistemic practices were used to teach? What aspects of the epistemic practice did students find easy to understand? Which aspects were difficult?
2. *Directed Observation*: What demonstrations, teacher questions, strategies or approaches increased accessibility for students when learning with the epistemic practices? What decreased accessibility?

Data Analysis

The analysis was guided by the text-study and *KQHL* assignments. The first step was to identify two students, one successful at using the epistemic practices across learning experiences, and one who struggled and improved over time. Students were rated as proficient, or developing with their understanding of the nature of the epistemic practices (e.g., what they are and what information is needed to use them) and the function of epistemic practices (e.g., how epistemic practices are used in the course and what is learned from using them). For the nature of epistemic practices, the student scoring proficient (>74/100) described the text-study and *KQHL* as processes that help coordinate science practices and concepts, interconnected (e.g. methods in the text inform how to refine laboratory protocols to test hypotheses on the *KQHL*), and used to develop claims supported with evidence. The student rated as developing (scores between 59-74/100) indicated that the epistemic practices are assignments completed in the science course and represent the scientific method. Developing students have difficulties making connections between the practices or using the tools to actively investigate a big idea in science.

For the function of epistemic practices, ratings for proficient (>74/100) indicated that students could use scientific text to develop ideas about science, infer investigative methods, identify potential data sources, express common sense theories on science topics and plan and carry out investigations. The students rated as developing (scores between 59-74/100) had difficulties negotiating text and engaging in investigation. For the text study, students may focus on extraneous features of the text or not attend to key components such as figures, diagrams and graphs depicting laboratory procedures, models of phenomenon, or the relationship between subheadings. For investigation, students may have trouble making testable hypotheses or refining laboratory procedures to test predictions.

Focus Inquiry into the Epistemic Practices

From the *focus inquiry* data, students' questions and clarifying statements about how the practices were represented, how the practices' interrelatedness is made explicit, and how the practices support constructing knowledge were rated as "complex," or "superficial." The questions and statements in the "complex" category contained inquiry about procedures, concepts, and justifications for a particular text or investigation. The student questions and statements in the "superficial" category contained questions about procedures or concepts, but not both. These individuals did not attend to multiple usages of the epistemic practices, their questions or statements grouped in the "little/none" category were characterized by questions or statements not related to the epistemic practices, and had very few indicators of the learning expectations.

Directed Observation of the Epistemic Practices

Directed observation was focused on eliciting student responses as they attended to certain aspects of the practices in action. Direct observation can be described as: The Teacher demonstrates the practices as students direct the "moves" of the teacher. Students are provided with prompts to make decisions about the logical progression through the practices while the teacher modifies demonstrations, uses examples and analogies, and constructs questions to help students make sense of the practice. The aim was to observe patterns in the elicited responses from students concerning the use of epistemic practices. Student responses to teacher prompts were coded into groups of skills described and cross-referenced with the type of knowledge reported to support the description. The tables below illustrate the description.

Skills	Indicators
Science Investigation	Asking questions, hypothesizing, Designing experiments, observing, measuring, and interpreting data
Text-Study	Writing and speaking scientific terms in complex sentences, asking questions, identifying scientific methodologies, identifying how text is organized, and using scientific information to support or reject claims

Knowledge	Indicators
Science Investigation	Knowledge of the phenomenon, Knowledge of controlled experiments, Criteria by which scientific knowledge is evaluated

Text-Study	Knowledge of scientific representations (models, diagrams, formulas), knowledge for judging scientific claims, knowledge of context in which science is used
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Findings

To illustrate the range of student performance, we first summarized the responses from a proficient as described above. As mentioned, one student demonstrated the ability to use the epistemic practice to coordinate the processes of inquiry and one student initially had difficulties with coordinating the processes.

Proficient Student

We begin with the student that successfully used the epistemic practices to learn biology. Students were introduced to a learning experience grounded in the following scenario:

A group of farmers are experiencing decreased crop production and need direction to solving the problem. You are scientists who are tasked with developing an investigation into soil quality and seedling growth. Your job is to investigate ways in which farmers can improve their soil composition and increase crop production.

We start the first discussion with a proficient student who used the two epistemic practices to approach the scenario: Asia

Focused Inquiry

Coordinating the six components of the text study was a major challenge during the initial *focused inquiry* into the text-study activity. To figure out how to use the practice, Asia first reviewed the sample of student work given by Ms. Smith. Each section was clearly labeled and Asia began to ask questions about how to initiate the process, “Ok, I start off with questions but how do I know what questions to ask?” She noticed that she could use the question stems document that was provided by the instructor to create questions. For the methods section of the text-study, Asia reviewed the “practice-text” for figures, pictures, and diagrams. She noticed that figures included pictures of animals, plants, and some included equipment or tools. Asia pointed out that scientists take pictures of the world, and that this may help them make better observations. She then made the connection between what she noticed in the practice text to what was expected of her in the course, “I’m going to do what these scientists did, make observations, take pictures maybe?” When prompted by Ms. Smith, she attempted to make sense of how text was organized using the headings of each section, “It states here that when you are doing science we use the metric system, then we use the system to organize data, to use microscopes when we work with cells. Can I put that down as the data analysis?”

For the *KQHL*, Asia appeared to have difficulty understanding how to alter the laboratory protocol to test a student-created question or hypothesis. For example, growing pea plants was the practice investigation to introduce the *KQHL* epistemic practice. The protocol called for growing seeds in sand or soil, however, Asia and her team decided to investigate how light affected seedling growth: “There are no instructions in the protocol for how we can test sunlight...how are we going to set up the lab?” After being reassured by Ms. Smith that space and equipment was available to set up a light vs. no light experiment, the team decided that the variable was darkness, and that

they could use the cabinets under the laboratory sinks as a “dark growing place” and put a separate group of seedlings under the growing lights.

Directed Observation

The purpose of directed observation was to elicit student responses about a phenomenon and to facilitate the use of the epistemic practice to learn the content and to increase the accessibility of science. For the initial directed observation of the text-study, Ms. Smith posed the question, “What questions can we come up with to help us understand the tools and procedures of science?” she challenged students to develop five questions about the section of the practice text. Each student had a copy of the practice text and was encouraged to brainstorm questions in small groups and then share them with Ms. Smith who made them public for the entire class. Asia actively referenced the question stems as she worked with her peers. She also reminded her peers that they could use the question stems: “I’m going to go with how many different types of tools are used in science?” Once Asia and her peers developed five questions they selected one person to share out one of their questions. Ms. Smith then wrote the question under the document camera and added it to a growing list of questions the class created.

Asia and her team then began to evaluate the figures and diagrams in the section of the text. Asia discussed with her elbow partner that the pictures in one figure have magnification labels, and each picture is 400x, 2200x, and 1000x respectively. Ms. Smith explained that figures, diagrams and graphs all have clues as to what methods were used to collect data that informed the reading. Asia determined for the magnification figures, there must have been a camera that took the pictures and magnified the organisms in them. Ms. Smith used the information to address the class and asked, “Is there another type of tool that can magnify and take pictures?” Another student provided a response, “Microscopes.” Asia heard the response and stated: “Oh, that was obvious, it says right here in the book, light microscopes and electron microscopes.” Ms. Smith and the class completed the text study by identifying possible data sources (i.e. pollen grains, bacteria, and plants), discussed how information was organized in the text (i.e. measuring systems, data analysis and tools), and the activity ended with responses to the student questions created at the beginning of the process and with a written summary that explained the topic of the section.

Developing Student

Like Asia, Rodney also experienced some difficulties with using the epistemic practices to engage in inquiry.

Focused Inquiry

During *Focused inquiry*, Rodney could recognize the components of the text-study and follow the accompanying rubric to understand what was required when writing his own questions and provide examples using the question stems. For example, Rodney used the lower level Bloom’s portion of the stems resulting in questions such as “Which shows the order of the metric system?” and “How would you compare light microscopes to electron microscopes?” As Rodney moved to the methods section of the text study, he began to have difficulties understanding what was required to link methodologies to the topic, “I’m not sure what to do here.” “What does it mean by methods?” Ms. Smith explained that he was to infer from the diagrams, pictures, figures and graphs what the scientists were doing or had done in order to present the information in the section. Despite these instructions, Rodney found it hard to determine the meanings of the figures and diagrams. After reading a section of text that included micrographs of pollen to explain how

microscopes are used in biology, he reasoned that the micrographs demonstrated how “scientists used pollen grains to measure in biology.” He did not understand that scientists were using microscopes as tools for observing pollen grains. Ms. Smith addressed this challenge in two ways, one she used an analogy to make Rodney’s implicit logic public to him and shared a list of science tools and their function. When working one-on-one with Rodney she stated, “What you are basically saying is your face is used to reflect images. Is that true?” Rodney perplexed, answered “No.” “What do you use to reflect images or what do you use to see yourself?” Ms. Smith asked, “OK., just like how you know that a reflection is done by a mirror, I want you to know that small objects, smaller than you can see are magnified by a microscope.”

When Ms. Smith shared the list of tools, she instructed Rodney to link the tools in diagrams and figures to their function on the list. For example, Ms. Smith pointed out that if he sees micrographs or pictures with magnifications that these pictures indicate that scientists used microscopes to see items that cannot be seen with the naked eye. This is what she means by “inferring.” The text does not always tell you exactly what scientists have done but they give you clues. She then instructed him to write his inferences in the methodology section of the text-study.

During *focused inquiry* into investigation, Rodney was better prepared to participate in discussion and understand the process of asking questions, developing hypotheses, and telling what he learned. He followed the logic of his table mates and went along with the class consensus about which questions were tested and the methods students in previous years used to perform the tests. During table conversations Rodney rarely referenced the rubric when discussing the examples of student work. Ms. Smith came over and asked “Why do you think this student chose to use microscopes in this protocol?” Rodney answered “the students needed the tool to see objects that were too small for the naked eye.” It took more probing by Ms. Smith to help him make the connection that cells were small and the students needed to use microscopes to see them.

Directed Instruction

During *directed observation*, Rodney found it difficult to work with his peers when guiding Ms. Smith’s demonstration on how to engage in the text-study. One problem that arose was Rodney’s habit of focusing on parts of text that were not pertinent to identifying methodologies, data sources or data analysis. He stated that he continuously searched for figures and pictures to inform him of what to write in the methodology, data sources and data analysis sections. Ms. Smith did not deter Rodney from doing this, but instead informed him that if he is looking at the figures and diagrams, he should “skim the text to find where they discuss the figure, and how this may give you clues as to where in the text-study this information belongs.” Ms. Smith then gave the whole class time to engage in this activity (about 3 minutes) and returned the whole class to the overhead for conversation. This is where she called on Rodney to share what he found in the text with his peers. As he shared what he read and how it informed what he thought about methodologies, data sources and data analysis, Ms. Smith actively wrote his responses on the overhead, making sure to organize his responses under the appropriate headings.

Much like Asia, there was some difficulty with alternating the laboratory protocol in order to test hypotheses. Rodney insisted on not changing the protocol, “Why can’t I just do the experiment that the protocol says?” Ms. Smith informed him that the questions he and his group created could not be tested by the given protocol and that the protocol would need modification. Ms. Smith worked with this group directly, helping them brainstorm through their research questions, “Can seedlings grow in Gatorade?” She began her interaction with the students by asking them “How can you test whether or not seedlings grow in Gatorade?” Rodney stated that

he and his team could “grow one seed in Gatorade and another seed just using water..” They were then probed by Ms. Smith to determine if they needed to do anything else for the investigation. She encouraged the group to discuss control variables, the manipulated variable, and what they were going to measure as a dependent variable. Rodney stated that he expected to measure the length of the plant as it started to grow, and remembered that he would be measuring with the metric side of the ruler.

Summary and Conclusions

The biology teacher in this study intended for students to develop questioning skills, critical thinking, and to work towards developing a community of learners in the classroom. Classroom communities and learning are as diverse and complex as the student bodies that they are comprised of. Taking a sociocultural stance to learning biology requires that teachers need to learn a great deal about their students and the communities in which their students reside in order to provide for and support authentic learning opportunities. This study presents a perspective of science learning that is counter to the “conventional wisdom” of science instruction where students engage in activities in order to receive the transmitted information in the format of an “elite” class. In contrast this study presented an epistemology of systematized and operationalized methods of encouraging students to participate in inquiry and interrogate expository text in real ways the students could relate to. In this type of classroom, the teacher intentionally critiqued her cultural script, shared it with her students, and asked for student input in the scope and sequence of the learning activities. In order to do this, the teacher needed an inquiry-based approach that included student voice and thought. The approach included the planning, enacting, interpretation and translation of student learning outcomes in response to the planned learning events. The use of *focused inquiry* and *directed observation* teaching as epistemic practices for instruction created the foundation for an inquiry-based approach to teaching and learning.

The student dialogues progressed from a focus on the procedures of the text-study and investigation process to seeking assistance with the content of hypotheses, the connections between the methods of the text-study to the procedures for the laboratory activities, and seeking approval for modifying laboratory procedures and using data to support or reject hypothesis.

The findings from this study suggest that the use of epistemic practices for teaching learning processes has a positive effect on urban high school biology student academic performance. The actions of the teacher required a commitment of time in order to address student interaction, participation and learning through the use of *focused inquiry* and *direct observation*. The *focused inquiry* component of instruction required the teacher to plan an investigation and transform it into a process that provided coherence and continuity between topics and units. Directed observation required the teacher to provide guidance during student investigations in order to assist them in making connections between the discipline core and the cross-cutting concepts, which also provided an opportunity for guided practice processes. The teacher actions increased the confidence of the students and encouraged collaboration. In addition, the Hollins approach as an instructional strategy provided students with an opportunity to actively participate in their learning and provided voice to student ideas, concerns and questions in a positive affirmative manner. For many students the teacher took the role of facilitator and elder in the room, indicating that the process has potential for empowering students to direct their own learning. Monitoring student performance on the products of epistemic practices, based on a student centered approach, is one indication that the students’ participation in focus inquiry,

directed observation and guided practice has potential for supporting positive learning outcomes in the era of NGSS.

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Infusing Neuroscience and Education to Create Equity

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Abstract: Educational leaders of today are faced with the responsibility to promote equity within their setting despite the zip code or type of populations they serve. The field of education has the opportunity to significantly impact the academic and behavioral outcomes of students that interface with the system. Bradshaw, Goldweber, Greenberg, and Fishbein, (2012) suggest that transferring knowledge rooted in neurological, cognitive, and emotional regulatory factors in the educational field can lead to effective preventative programs that also support academics. The absence of this type of perspective in the educational field confounds the growth of theory as well as the advancement of educational practices in general (Anderson et al., 2016). Strengthening theoretical practice is what can help educators and politicians alike understand how to best develop enriching experiences for all students in all educational settings (Duckworth & Yeager, 2015). With the explosion of literature in neuroscience and the medical field in referencing how human beings respond to various stimuli and how this stimulus can hinder human beings from learning, it is crucial that educational leaders and policymakers find ways to infuse research from neuroscience into educational practice as well as policy for the sake of equity. This paper attempts to illuminate how the educational field can codify research from neuroscience along with the biology of trauma to help educational leaders and policy makers understand how to work best with underserved populations within school settings to promote equity and a healthier society.

Current Professional and Moral Challenges

Leaders of today and of the future have the potential to change the world and create equitable conditions for marginalized populations. Anyone trying to change the educational system should holistically understand the complete quest within the roles of a leader, as well as the power leaders have to offset inequities that have manifested throughout time. This is important because educational practices and policies that affect youth generally do not address or even begin to reflect awareness of the degree to which very early exposure to stressful experiences and environments have on the engineering of the brain, the body's stress response system, and the potential for unhealthy outcomes later in life (Center of the Developing Child, 2014). Neuroscience research helps us understand that all human beings are prone to stress. Stress is experienced on a wide spectrum by human beings (from healthy to toxic). Toxic stress can significantly impact academic functioning and more importantly, psychosocial well-being; which impacts a human being's DNA, mind, body, and soul (Harris, 2018). Repeated and concentrated toxic stress places children, youth, and adults at greater risk for delinquency, substance abuse, mental, physical, and

behavioral health problems, and impedes educational and employment success (Bond, Butler, Thomas et al., 2007, Edwards, Anda, Felitti, & Dube, 2004; Fergusson, & Horwood, 2007). The National Child Traumatic Stress Network (NCTSN, 2014) reported that as many as one out of every four children attending U.S. schools have been exposed to a traumatic event that can affect learning and/or behavior.

During the fall of 2016, enrollment of students having attended public elementary and secondary schools in the United States was approximately 50.4 million students (National Child Traumatic Stress Network- NCES, 2016). It is estimated that 1.2 million students drop out of high school every year (Eleven Facts About, n.d.). Specifically, it is reported that 50% of youth with “complex trauma” leave school before graduating or are not college ready after graduating from high school (Ferguson, Tilleczek, Boydell, Rummens, Cote, & Roth-Edney, 2005; Meichenbaum, 2006). Trends over the past decade have indicated that students are now taking longer to graduate from higher educational institutions, are experiencing poor academic preparation, lack clear understanding about how to navigate college, and are undecided about the major or career they would like to pursue (Complete College America, 2011). With many universities struggling with student on-time completion, the California State University (CSU) board has created a goal to increase on-time graduation rates from the current rate of 19% to 40% by 2025 (College Board Advocacy and Policy Center, 2011). Metzler et al. (2017) reports that a community college student who experienced Adverse Childhood Experience (ACE) can have challenges with academic success and completion compared to their counterparts who didn’t endure ACE.

On a macro - level, adverse childhood experiences are global public health issues with the United Nations estimating that over 275 million children worldwide experienced some form of violence at home (Anda, Butchart, Felitti, & Brown, 2010). The total estimated economic burden ACE’s pose nationally is over \$1 trillion (White Paper Steering Committee, 2013). The Adverse Childhood Experience (ACE) report (one of the largest studies of its kind) calls for an integrated approach to intervene early with children growing up being abused, neglected, witnessing domestic violence, or with substance abusing, mentally ill, or criminal household members (Felitti & Anda, 1997). Studies have revealed that student-teacher relationships help mitigate the negative impact of trauma, improve mental health and well-being, and optimize academic and social success (Mihalas, Morse, Allsopp, & McHatton, 2009; Shochet, Dadds, Ham, & Montague, 2006).

ACE and Neuroscience

For years, adverse childhood experiences have been a largely unrecognized public health crisis and yet, the link between trauma and health is important to educational research (CDC, 2014). The ACE research study explores the common stressful and traumatic exposures affecting the (neuro) development of children. The ACE study was a decade-long study constructed to assess the childhood origins of many of the nation’s leading health problems, and the research generated was the largest study of its kind both in scope and in information collected. The Adverse Childhood Experiences study was a longitudinal study that involved 17,337 adults who became members of Kaiser Permanente Health Center in San Diego, California between 1995 and 1997. This voluntary study asked patients a total of 10 questions in reference to types of trauma they experienced as a child.

This study focused on 10 ACE categories (Anda, Edwards, Felitti, Koss, Marks, Nordenberg, Spitz, & Williamson, 1998) that are separated into three domains: abuse, neglect, and household dysfunction (Center for Youth Wellness, 2014). The first domain consists of three different forms of abuse: physical, emotional, and sexual. The second domain assesses physical

neglect and emotional neglect. The third domain identified five indicators of household dysfunction. These five indicators are comprised of domestic violence, substance abuse, divorce, incarcerated relative, and mental illness. The combination of three of any of these indicators from any domain at one time in a child's life is what is known as ACE (Center for Youth Wellness, 2014). ACE for a child were found to be pathways to social, emotional, and cognitive impairments that lead to increased risk of unhealthy behaviors, risk of violence or re-victimization, disease, disability, and premature mortality in adulthood (Anda et al., 1998).

The ACE study found that 64% of the population that was surveyed had at least one or more of the ACE criteria. Chronic and multiple adversities in childhood can cause mental health disorders such as depression, hallucinations and post-traumatic stress disorders (Anda, Edwards, Felitti, Koss, Marks, Nordenberg, Spitz, & Williamson, 2004). Neuroscientists studying the impact of trauma on brain development have determined that ACE or complex trauma alter brain structure and prevent learning. Dr. Bruce Perry created the term "complex trauma" for individuals who experience concentrated trauma in their lives and environments (Perry & Szalavitz, 2008). He describes this phenomenon similar to Post-Traumatic Stress Disorder (PTSD). Dr. Perry used soldiers coming back from war and exhibiting PTSD upon returning home from war as a comparison to complex trauma.

The difference between PTSD and complex trauma or ACE is that individuals who are exposed to repeated and concentrated toxic stress never leave the war and their brain's function is trying hard to cope with the toxic flow of stress saturating their developing brain just to survive within these conditions and environments. Van Harmelen et al. (2010) observed an association between ACE and an average 7.2% decrease in the volume of the dorsomedial prefrontal cortex PFC (dmPFC) compared to those who did not have ACE. This suggestion is critical as researchers suggests the importance of this region in social processing for the developing brain (Carlson & Birkett, 2016; Eickhoff et al., 2016). The connection between childhood trauma and a decrease in the size of the PFC considerably affects the ability to regulate emotions, particularly those involved in a stress response. Experiencing repeated stress as a child diminishes the normal architecture of the individual's brain. This causes an individual to readily perceive situations as life threatening, causing the individual to be more impulsive and vigilant in educational settings (CDC, 2014).

ACE in the Classroom

Research studies from across disciplines postulate the negative impact of trauma on all aspects of a child's development. Blodgett's (2012), study found that classrooms in high school settings had at least 10 out of 30 (33%) students with an ACE. Blodgett determined that ACE was the greatest single predictor for health attendance and behavior issues in schools. This study suggested that adverse events were the second strongest predictor, after special education, for academic failure in public education. These findings inform educators of the frequency of students exposed to ACE within the classroom setting in order to begin to develop methods to support students, now, and in the long-term. By focusing on the needs and education necessary to combat ACE, there may be an opportunity to see more equitable school systems.

In the context of the education system, interacting with children who have suffered from toxic stress appears to be the new normal for public education. Blodgett and Lanigan (2018) reported on the association between repeated acts of toxic stress or adverse childhood experiences (ACE) and school success (2018), 44% of elementary school children were found to have exposure to at least one ACE, with 13% experiencing three or more recurring instances of repeated and various forms of abuse or neglect. With trauma being an underlying factor that hinders a child's

developmental process, it is important for educators to understand the experiences that lead children to poor health and adult outcomes. The Harvard University Center on the Developing Child (CDC) (2014) refers to the impact of toxic stress on a child's development and wellbeing as a threat to human society. Toxic stress occurs when a child experiences strong, frequent, and/or prolonged adversity- such as physical or emotional abuse, chronic neglect, caregiver substance abuse, or mental illness, exposure to violence, and or the accumulated burdens of family economic hardships—without adequate adult support (CDC, 2014). Prolonged stress response such as this can disrupt brain development, impact health and 'increase the risk for stress-related diseases and cognitive impairment, well into the adult years' (CDC, 2014). Children are also at higher risk when they exhibit greater distraction and thought suppression after a traumatic event, and when they experience low social support and poor family functioning after the event (Trickey, Siddaway, Meiser-Stedman, Serpell, & Field, 2012). If leaders fail to address the needs of these particular students coming into school systems suffering from this type of toxic stress or complex trauma, and not provide educators of public education with the training needed to offset these conditions, school systems will continue to foster inequity in public education systems (K-20).

ACE and Discipline

As more research becomes available, educational leaders have a choice to continue with traditional ways of working with their district or sites, or adopt new ways that are being influenced by neuroscience, pediatric clinicians, and medical physicians alike in how human's best acquire learning. This is where this dynamic becomes an ethical and moral issue for educational leaders. Leaders or influencers of a system (district, site, or community) have the power to create equity and social justice in the system. When looking at school discipline disparity data it is well-documented that there is a visible disproportionality in expulsions and suspensions between races. Hispanic, Native American, and African American students are being suspended from public education settings at a much higher rate than their white counterparts (Gonzalez, 2012). This has led to a disproportionate amount of issues that stem from suspensions for these populations- such as the school to prison pipeline. In the past 50 years the fields of education and psychology have demonstrated that punitive types of discipline policies and practices are often associated with and can contribute to increased disorder in schools; which ultimately can lead to behavioral and academic problems among these students. Studies like ACE and research from neuroscience inform educational leaders how trauma hinders the brain and how to utilize the translational approach when developing educational and preventative programming to attempt to find equity within the public educational sector.

The way leaders implement discipline-practices lead to the inequities seen not only in education but within various institutional structures. Discipline is defined by the *Oxford English Dictionary* as "a branch of learning or scholarly instruction". When students suffering from complex trauma (especially those of color and from poverty) get in trouble, they do not contract discipline by definition, they receive punishment. Rather than teaching students through discipline, school systems use discipline to punish and shame these students, and could possibly be adding to the trauma that students with ACE face. Even with research demonstrating that punitive approaches not only disengage students from learning, they lead to the perilous conditions that breed inequity for historically disenfranchised populations.

Traditional methods of discipline emphasize control and compliance with high levels of accountability placed on individuals (Mirsky, 2007). Although punitive discipline policies have been found to have a harmful impact on all students in schools, they disproportionately impact

students of color, students with disabilities and students who identify as LGBTQ (Public Counsel, 2014), and if these students have trauma, the chances for being at risk grow exponentially. For example, although African American students make up only 15% of students in public schools, they make up 35% of the total students with one suspension, 44% with more than one suspension, and 36% of students who are expelled (United States Department of Education (USDE) & United States Department of Justice (USDOJ), (2014). The nature of the behavioral problems in schools is best understood as a result of being relegated to an environment that does not meet children's basic human needs for belonging, care and participation. In sum, the way educational leaders discipline students greatly impact's equity, creates disproportionality, and needs to be monitored with more intention from all educational leaders and policymakers with the new emerging research on the negative effects of punitive discipline on marginalized populations.

Traditionally, schools have dealt with students of trauma (like the ones described in the prior paragraph) with suspension, expulsion, alternative placement, medical diagnosis, and other ways that brain science suggests harms individuals more than helps them. Punitive practices place more focus on the rights and welfare of the school community over those of individual students; research has shown that they actually do not make schools any safer (Gonzalez, 2012). Furthermore, punitive discipline has been shown to alienate students from their schools and negatively impact the overall climate for learning (Public Counsel, 2014; Kimball, 2013). The idea that school safety comes from within, rather than from outside measures, has been evidenced in a growing body of research regarding school climate. Findings after an in-depth analysis of 37 school shootings, cited that "climates of safety, respect, and emotional support can help diminish the possibility of targeted violence in schools" (Gonzalez, 2014). When school climate is positive, school connectedness increases and the community of students and adults within are more caring and responsible for one another. The attention to climate and connectedness should be of the utmost concern in schools. According to Thorsborne & Blood (2013), "it is the challenging of mindsets where true culture change begins... where individuals transform [their] world view...to change their frame of reference by reflection on and challenging their beliefs and assumptions" (p. 59). This notion is important, as it shows how school systems can illuminate equity by the way leaders manifest their collective climate, and how intentional approaches can offset trauma; rather than reproducing it into the school setting.

Neuroeducation to Create Equity

For year's various fields of research have indicated that disenfranchised students, specifically targeted by stigma and negative stereotypes, often ponder whether they belong in an academic setting (Goffman, 1963; Walton, 2014). Factors such as these (which most educators are unaware of and have had no training on) permeate multi-layered issues that disenfranchised students face all across the United States and leads to inequities in schools; especially within marginalized populations. Generally, factors that hinder student success overlap and are multifaceted. These complex issues raise challenges when attempting to measure exactly how to support students through their academic journey. Educational guidelines and curriculum that affect student's learning commonly do not address the extent of which, premature exposure of traumatic events coupled with "toxic" environments have on the architecture of the brain. This is one of the biggest issues that lead to inequity, because as this dynamic is being ignored; all students are then forced to learn exactly the same. By failing to integrate curriculum to stimulate the brain of all students (despite their exposure to trauma or toxic environments) educational leaders are allowing inequities to wreak havoc every day and often punishing these students for not being able to

comply to the status-quo of today's educational standard; despite the aforementioned research from neuroscience.

The nature of the behavioral problems in schools is best understood as a result of being relegated to an environment that does not meet children's basic human needs for belonging, care and participation. The lack of these stimuli combined with other complex traumatic effects can lead to student's brains not developing at a normal rate. This dynamic can manifest as behavioral issues in the classroom, due to the brain coping with complexity of toxic stress being outputted in their given situation. In fact, a child's own loss of connectedness to community is a crisis affecting society as a whole; children may simply be manifesting the symptoms and schools are reinforcing them. Discipline impacts equity and creates disproportionality. How a school's culture illuminates school safety or does not, and how school environments tend to student's basic needs, can re-traumatize students; which lead to the moral and ethical challenges mentioned within this paper. Scientific research clearly states that educational leaders must focus on creating an ethic of care and social justice that makes schools safer and students' happier, not only through reducing inequity, but also in terms of developing active citizenship skills, good self-esteem, open communication and team work in students, staff, and the community. This type of intentional community building in schools "... is a path to creating students who will be wise and humane adults, who care about justice, and who are able at pivotal times to put the common good before their own" (Weissbourd & Jones, 2014, p. 47).

Conclusion

As leaders of educational systems it is a must to advocate for meeting children's basic needs such as: physiological needs, safety needs, love and belongingness needs, self-esteem needs, and self-actualization needs (Maslow, 1943). Within this philosophy, the antecedent to learning is having these needs met, so that individuals have the most receptive mind when it comes to holistic learning and may reach their own personal self-actualization. Therefore, any school environment, learning, and/or curriculum which does not offer a method to bridge the gap of basic needs of all students, is impeding the learning process for many underserved students as well as illuminating the inequities seen in education since its infancy. Paulo Freire has a name for a type of intentional activism, that he calls it "praxis" (Freire, 1985). This method of practice is effective because it can help schools understand their ethical and moral obligation to restore the school communities to meet the needs of children and to foster environments where adults can enjoy educating and all students can thrive. The well-being and best interest of each student should be a central focus and "non-negotiable" in education and educational training programs. This includes infusing education and neuroscience into a codified research field-neuro-education, in attempts to help public education begin to educate the brain according to best practice as a method to increase equity and critical learning. Through this intentional activism combined with evidence based practice, educational leaders and policies can advocate for equity in public systems that were not initially designed for all students.

For educational leaders and policymakers, it is imperative that they require training on the nature and severity of different types of stress responses to adverse childhood experiences and how these complex traumatic experiences manifest in the classroom to teachers and other educators. It is an obligation to transform education and infuse neuroscience research into education to support more equitable approaches for students who suffer ACE. It is important to note this obligation, since every year, parents from all over the United States send their children to public schools with good faith that all educators understand how the brain develops and learns. Yet, rarely do

educators take courses during their training that teach them how the brain learns and react to various stimuli within their environmental context.

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