An Interdisciplinary Approach to Developing Black Student Identity through Culturally Responsive Pedagogy

By Paula Johnson, Ph.D.
Director, IDRA EAC-*South*

IDRA

EAC-*South*

Contents

Introduction

This literature review proposes the employment of an interdisciplinary paradigm that centers the development of students' academic identity through culturally responsive pedagogy (CRP) (Ladson-Billings, 1995) that specifically targets and disrupts biases in the classroom concerning the education of Black youth. Ladson-Billings (1995) sought to transform an educational system designed to teach students the necessary skills required to succeed in mainstream society. She studied models of instruction that included observations of students in their home environment (Ladson-Billings, 1995).

Racial Bias in Education and Curriculum

Interdisciplinarity provides alternate perspectives through which we might better understand the ways in which Black students and their access to education intersect and collide. Many educators view academic disciplines as gender- and racially-neutral (Walker, 2015). However, as with many historical textbooks, significant contributions made by women and men of color continue to be left out of the traditional curriculum (Loewen, 1995; Zinn, 1990).

Implicit and explicit biases found in student textbooks serve as additional barriers to education equity. UNESCO (2008) firmly states that gender bias in textbooks is a critical matter in education that is one of the most hidden obstacles and most difficult to remedy. Work by Tang, Chen, & Zhang (2010) claim that the majority of textbooks and materials convey the notion that that males are naturally better at absorbing knowledge. Additionally, students are presented with a myriad of white, European, and male figures as the fathers of society, further contributing to the myth not only do students of color have no place in enriching school environments, but neither do women and young girls. Teachers' perceptions about education and how subjects should be taught are based largely on their personal experiences as students (Durant, 2013). Educational equity will only be realized when educators in the field recognize and deconstruct the negative social discourses at work around issues of race and gender (Gutiérrez, 2013).

Culturally Responsive Pedagogy and the Development of Student Identity

Applying an interdisciplinary lens to teaching and learning is grounded in a educators' transparent display of cultural awareness and competence in regards to students' beliefs surrounding their academic abilities (Hill, Corbett, & St. Rose, 2010). Culturally responsive educators create a learning environment that promotes instruction that allows for each student to critically analyze and relate to course content from his or her own cultural context. The goal of culturally responsive pedagogy is to build connections between home and community with the school environment. It is the joining of the curriculum being taught, how it is being taught, and the cultural identity of the students involved.

In an effort to move the efforts of culturally responsive pedagogy forward, Paris & Alim (2014) proposed culturally sustaining pedagogy (CSP) as an instructional approach that "keeps pace with the changing lives and practices of youth of color" (p. 85). Culturally sustaining pedagogy considers and problematizes previous asset-based pedagogies centered on communities of color and the cultural practices of the youth within these communities (Paris & Alim, 2014). The authors seek to empower youth of color by moving to sustain heritage and community practices

(2014), like culturally responsive pedagogy. Initiatives are needed to outline methods of furthering the movement to uplift and expand Black youth's advancement in education.

Historically, most curriculum materials present a white, male-dominated history of notable figures and their contributions to the development of society. Culturally responsive pedagogy has the potential to allow Black students to explore the great achievements made by people of color to build confidence and increase motivation. However, educators need tools and resources outside of their discipline for promoting the development of student agency and identity. Grant & Sleeter (1986) believe that the only way to investigate student perceptions is through an interdisciplinary lens that connects race, gender, class, and culture to understand the origin of many of student's attitudes toward learning and instruction.

Research is needed that addresses the ability for students to see themselves in the curriculum, the history, and as future professionals in the field. Research of this nature must take shape around the critical examination of the complex and historical nature of education in the United States. It is necessary to explore normalized traditions, policies, and practices of our educational systems and institutions that are limiting access to equity learning opportunities due to race, gender, and class.

Teachers must begin by believing all students can succeed (Boaler, 2006). A contemporary of Gloria Ladson-Billings, Delpit urges educators to develop a mindset that students in urban settings are not innately incapable of learning (2012; Delpit & Ladson-Billings, 1996). For the most part, white teachers have had little to no interaction with students of color prior to the classroom setting and may have preconceived, stereotypically negative notions about their academic abilities (Sleeter, 2001; Delpit, 2012). This can place Black students in educational settings with enormous levels of stereotype threat – anxiety stemming from concern over confirming a negative stereotype believed to be true about their racial or ethnic group (Delpit, 2012). Delpit battles the marginalized views of Black children's ability and challenges others to acknowledge and recognize the culturally based funds of knowledge these students possess (2006). She charges educators to champion the children that have been dismissed or lost to the system (2012). Without representation by all marginalized groups, we have not succeeded in our efforts for socially just education for all. It is imperative to bridge connections with students' home culture with the learning taking place in the classroom (Delpit, 2012). There is power in integrating students' culture in the classroom (Delpit, 2006). This is especially true where many of the concepts are abstract notions that we ask students to accept without proof, especially those that go against student's cultural knowledge of history (Boaler, 2002). Moreover, we must strive to create learning spaces that go beyond achievement tests to provide engaging activities that offer opportunities for students to make connections between their communities and the

content they must master. These experiences nurture the development of critical thinking and academic identity (Anderson, 2007).

Students' identities can also be influenced by societal and cultural attitudes regarding gender roles that begin early in life and are spread through various cultures, the media, and regrettably, many teachers (Martin, 2012). Research fails to make connections toward understanding how racial minority groups experience education (Ashford, et al., 2017). Race, gender, and class have historically undermined the advancement of Black students in predominately white spaces (Russell, 2011; Walker, 2015; Ashford, et al., 2017).

Researchers focused on Black students in education report that many feel isolated and unsupported in their efforts leaving them discouraged and losing motivation (Durant, 2013; Kolo, 2016). When students do not develop persistence in the face of stereotype threat, they can be easily deterred and choose not to continue toward advanced coursework (Gutstein, et al., 2005; McGee, 2015; Walker, 2015). Joseph, Hailu, & Boston (2017) add that persistence by Black youth in advanced courses is necessary to cause structural disruptions to the traditional school environment that have moved to prevent them from participation. Since the times of slavery, U.S. society has perpetuated degrading stereotypes of people of color (Hooks, 1994). Especially longstanding beliefs transmitted are that people of color are lacking in intelligence, loud, aggressive, and wild-natured. Black youth need encouraging, supportive teachers to succeed in the face of hostile educational settings (Joseph, et al., 2017).

McGee's (2015) research supports the importance of developing academic identity for Black students as they struggle to make sense of the racial tension present in the school setting. Moving along a range from fragile and robust moments in their identity, successful students can face these challenges through resilient qualities. Borrowing from McGee's Fragile and Robust Mathematical Identity (FRMI) framework, we can investigate identity development across many academic disciplines for students of color. Using the framework as a model, such an investigation consists of three components:

1. Central motivations to succeed in education;
2. The use of coping strategies in response to students' racialized educational experiences; and
3. Dispositions associated with one's successful outcomes in education (McGee, 2015).

For young Black students, the development of these components, coupled with positive experiences and perceptions of people of color in education provide a nurturing environment for emerging scholars.

Critical Race Theory

Critical race theory (CRT) is a theoretical framework that emerged from critical legal studies and radical feminism that provides an equitable lens through which to research socially marginalized groups (Delgado & Stefancic, 2001). Critical race theory emerged from the work of legal scholars like Kimberle Crenshaw, Derrick Bell, Alan Freeman, and Richard Delgado during the late 1980s. Their examination of societal issues sought to expose abuses of power and oppression against people of color (Crenshaw, 1991; Delgado & Stefancic, 2001).

Solórzano (1998) outlines Mari Matsuda's seminal definition of critical race theory as "the work of progressive legal scholars of color who are attempting to develop a jurisprudence that accounts for the role of racism in American law and that works toward the elimination of racism as part of a larger goal of eliminating all forms of subordination" (p.122).

Bell & Freeman are credited with beginning the ground-breaking work that grew into a social movement (Delgado & Stefancic, 1993). Critical race theory includes scholars and activists who seek not only to study, but to transform the interconnected relationships between power, race and law.

Key concepts of critical race theory have been proposed by various critical race scholars. The basic tenets of critical race theory as outlined by Delgado & Stefancic (2001) and Levinson (2011) include:

1. **Racism as ordinary:** Racism is a pervasive aspect of our society experienced daily by people of color in the United States;
2. **Race as a social construct:** Race and races are social constructs invented by those in power of the dominant culture to continue oppression based on societal and cultural hierarchies;
3. **Interest convergence (or material determinism):** Racism works to further the interests of the white elite and working class to the sustained discrimination against marginalized groups;
4. **Hegemony:** The leadership or dominance of one social group or ruling class over another coupled with an un/conscious endurance of the dominant culture;
5. **Differential racialization:** The tendency of the dominant society to racialize various racial/ethnic groups based on unique contexts that serve their purpose and the distinct experiences of racism by those groups;
6. **Intersectionality:** The concept that forms of race, discrimination, and oppression do not

operated independently, but rather as overlapping and converging identities; and

7. **Counter story (narrative):** Gives voice to people of color to recount their experiences that refute the master narrative and examines instances of racism and discrimination that might otherwise not be heard.

Critical Race Theory in Education

The expansion of critical race theory from legal studies into education over the past 20 years has increasingly provided a framework for the critical examination of disparities in public education. Critical race theorists, such as Ladson-Billings & Tate (1995), introduced the application of critical race theory to K-12 education to investigate inequitable practices that denied students of color educational opportunities. Further development of the theory by Solorzano (1998) provided researchers with a means to extend the reach of critical race theory to include post-secondary learning environments. Used appropriately, critical race theory guides critical investigations into the experiences of historically underserved student populations with regard to discipline, access to advanced coursework, and hidden biases that infiltrate the educational environment and serve as barriers to the academic advancement of children of color.

Critical race scholars including Lynn, Yosso, Solórzano & Parker (2002), and Dixson & Rousseau (2005), warned that educational endeavors that apply a critical race theory framework requires an adherence to the theory's origins. Situating these investigations in the legal groundwork critical race theory has grown out of is a necessary vehicle for analysis (Dixson & Rousseau, 2005; Ladson-Billings, 2005; Tate, 2005). It is not enough to just recognize the injustices in education, we must aim to eradicate them.

Critical race theorists explore forms of power and oppression in systemic institutions that are part of our daily lives, e.g., school, the workplace, and law enforcement, to challenge or eliminate them (Delgado & Stefancic, 2001; Ladson-Billings & Tate IV, 1995). Bell (1980) argued that the interests of Black people were only served when they aligned with the same interests of those in power. This interest convergence is what sparks many supposed advances in education, namely *Brown vs. Board of Education,* and the push for increasing participation of girls and students of color in STEM education. Most campaigns that appear to advocate for equitable educational opportunities for underrepresented student groups is usually are self-serving endeavors that will likely benefit the grantor as much as, if not more than the grantees (Ashford, et al., 2017).

Intersectionality

Intersectionality is the convergence of multiplicative identities and provides a lens through which we can study power and oppression (Wing, 1990; Delgado & Stefancic, 2001). Gender, race, class and religion are social constructs that have independently and collectively bred massive discrimination in almost any setting. Each person's life experience is comprised of multiple contexts by which they define themselves (Wing, 2003). These interconnected "selves" endure a variety of biases and discrimination in educational settings. MacKinnon describes intersectionality to recognize and resist the reality of numerous dimensions of discrimination (2013). It brings focus and attention to these constructs and power dynamics that many tend to overlook.

Intersectionality is a component of critical race theory and critical race feminism (CRF) that reveals the merging of multiple identities and offers a lens through which we are able to study power and domination in a variety of situations, including educational settings (Delgado & Stefancic, 2001; Kanny, Sax, & Riggers-Piehl, 2014). The work of Crenshaw challenges that, to truly understand a system, we must examine for whom the system does not work (Crenshaw, 1991). This commission seeks to address the challenges students of color education and achievement. The most salient notion from the scholarship of Kimberlé Crenshaw's seminal piece, Mapping the Margins (1991) is the concept that intersectionality provides us with multiple facets and layers that operate all at once, in tandem, and are inextricably linked. She discusses the emergence of identity politics and the dynamic tension that manifested in the 1990s between said politics and the traditional-liberal view of social justice. Crenshaw (1991) defines identity politics as social and systemic movements or activities specifically organized and characterized by race, gender, sexual orientation, or other marginalized groups. Crenshaw's issue with identity politics lies in the disregard to differences among members of said groups as their lived experiences within a shared identity may manifest in entirely different ways creating inequities. The intersectionality of these identities interacts differently, particularly the dimensions of racism and sexism as experienced by women of color and therefore cannot discount either.

Crenshaw (1991) further outlines three types of intersectionality that can be applied to learning and teaching:

- **Structural intersectionality:** Explicates how the multiple and socially constructed categories of race, class, gender, etc., become sources of further oppression. In the public-school setting this is seen in instances where an intervention is based on one issue but fails to address other important needs of the student. For example, students receive additional mathematics assistance but not reading – the primary cause of the challenges they are

facing in school. The focus should be on the whole child, not individual facets;

- **Political intersectionality:** Occurs when the movements working toward social justice for different groups unintentionally compound the marginalization of those same individuals whose identities may have opposing agendas. For example, a Black lesbian student may stay silent on issues of gay/lesbian rights for fear of causing strife with fellow members of either social category; and

- **Representational intersectionality:** The multiple stereotypes (especially in media, film and music videos) that become accepted as the norm for any particular group ignoring the wide range of differences within it. A classic example is the portrayal of Black women and girls complete with neck and eye rolls, finger snaps, and extremely loud vocals when they speak. This becomes an expectation in the classroom and causes many students to come under punitive action for simply asking a question. These actions are interpreted as intentional disrespect, noncompliance, and willful disobedience to name a few.

Cho, Crenshaw, & McCall (2013) present intersectionality as a methodological approach, as a theoretical framework, and as praxis. As an approach, intersectionality analyzes the interdisciplinary ways in which intersectionality has been adopted or expanded and questions what has been included, excluded, or enabled. Used as a theoretical framework, intersectionality can be employed to unpack social inequalities and systemic injustices that occur on multidimensional levels. Intersectionality as praxis is not merely a foundation for research but is being applied in various contexts including movements related to economic justice for people of color earning low wages, and legal and policy advocacy working toward overcoming discrimination based on gender or race.

Intersectionality provides a framework for understanding how our multiple identities work with and against each other in the various settings in which we find ourselves the object of discrimination. It is also providing a means for people of all social and systemic categories to recognize their multiple dimensions and work towards equity on all counts.

Teacher and faculty gender and race have been shown to be influential on increasing student identity and achievement for students of color (Ladson-Billings, 1995; McGee, 2015; U.S. Department of Education, 2016). Race-congruent educators serve as role models, pushing students to take on challenges, and overcome stereotypes (Egalite, Kisida, & Winters, 2015). Racially congruent classrooms have a high percentage of students that are receiving instruction from a teacher of the same race (Oates, 2003). Racial congruence between teachers and students have a greater chance of shared characteristics between their cultural/ethnic

backgrounds (Gay, 2018). Additionally, Gay (2003) argues that "social studies teacher education is undertheorized in the teaching of race and racism as well as in preparing preservice teachers to do this work in a K-12 setting" (Demoiny, 2017). Her research concluded that oftentimes social studies teacher education and textbooks completely ignore race or provide only a surface level of study.

MacKinnon (2013) identifies two particularly important concepts that contextualize the multiple aspects of our daily interactions in the world.

1. **Stereotypically gendered:** an instance where the court recognized how racism influenced the ways in which intersectional discrimination was directed against a Black man.

2. **Reification (reify): taking** a phenomenon as a given, or truth, as they appear; or to take something abstract and make it concrete. For example, culture is spoken of as a tangible thing, but it is in fact a collection of lived experiences, traditions, practices, and ideologies. MacKinnon's (2013) argument is that "the conventional framework fails to recognize the dynamics of status and the power hierarchies that create them, reifying sex and race not only along a single axis but also as compartments that ignore the social forces of power that rank and define them relationally within and without."

One critical topic in education that is gaining momentum is the evidence of impact that implicit bias is having on public school education. In most cases the bias is based on race, language, class, or gender. Children of poverty, English learners, girls in general, and Black and Latino boys are the victims of racial profiling and discrimination leading to negative experiences for many students. As educators, most teachers do not want to believe that they possess these implicit biases. They consider themselves "colorblind" and are not willing to engage in the conversations or transformative actions that will lead to a more inclusive learning environment for their students.

MacKinnon (2013) would say that these teachers need to begin thinking about the way that they are thinking in addition to what they are thinking about in regard to their students. Additionally, Cho, Crenshaw, & McCall (1991) might assert that the intersectional identities of students present unique experiences for them. Issues of discrimination should therefore be addressed at the individual teacher level as well as the systemic level concerning school climate. Finally, Crenshaw's work would advocate the protection of students' identities related to instruction, discipline and curriculum. The learning environment should embrace all students so that they can be successful. Teachers' personal beliefs are carried out in their actions toward students and should never be discriminatory.

Multidimensionality & Multiplicative Praxis

Multidimensionality is a key component of critical race feminism aimed at acknowledging "the multidimensionalities of our personhood" (Berry & Candis, 2013). It is the active functioning of one's multiple identities occurring simultaneously, "informing one another in practice (e.g., teacher as parent, teacher as parent and community member, historian as traveler). In many cases, intersectionality and multi-dimensionality function together" (Berry & Stovall, 2013, p.590). To bring the point home, Wing (1990) explained that if she were to multiply each of her identities together, "one x one x one x one x one," the product is one indivisible entity. And even "if you divide one of these parts from one, you still have one" (p. 194). It is a challenging concept to absorb for individuals in the majority who do not have to consciously operate within and across the multiple layers of their identity.

Critical race feminism theorists and advocates stress the importance of the collaborative nature of theory and praxis within this framework. Critical race feminism focuses the narrative on those that the dominant culture strives to suppress, those who are considered less than, and othered. Counterstorytelling is a mode of communication that offers a deeper understanding of the lived intersectional experiences of individuals. As praxis, these counternarratives should embolden other intersectional being and lead to changes in societal practices that address the disparities identified among those being marginalized.

Counter Storytelling

"There is no single true or all-encompassing, description" (Delgado, 2014) of anything. Our social reality is largely constructed by the in-group, depicted by Delgado as the dominant group who maintain an innate sense of superiority and oppression over the out-groups (2014). Comprised mostly of Black and brown citizens, out-groups use stories, or counter stories as Delgado coined the term, to disrupt the status quo by offering an alternate reality that brings light to the iniquities that persist in our society. These chronicles provide an alternate truth to the disparaging #fakenews the powerful few would have us believe about people of color, women, and other communities that the in-group may consider undesirable. Born out of legal scholarship, counternarratives are weapons used to present an alternate reality that challenges the dominant narrative.

Counter storytelling includes discourse, text, and language that serves to disrupt the traditional beliefs or stereotypes held by the majority, amplifying the voices of the marginalized (Delgado & Stefancic, 2001). Relating to the Black community, counter stories attempt to challenge these preconceptions that serve to perpetuate false ideologies concerning tendencies towards violence and level of intelligence or work ethic for example. The book Hidden Figures (2016) tells the true story of three Black women mathematicians and engineers who worked for NASA. These women played an instrumental role during the early years of the U.S. space program and helped to launch the first man into orbit. Most of the world is only coming to understand the enormous impact of their participation more than 50 years after the fact.

Solórzano & Yosso (2002) add to the definition of counter storytelling as the technique of telling the stories of marginalized individuals whose stories are seldom told. These resistant narratives challenge the normative discourse of the dominant other. Three forms of counter stories are outlined by Solórzano & Yosso (2002): (1) personal stories or narratives; (2) other people's stories or narratives; and (3) composite stories or narratives. Counter story is not fictional (Solórzano & Yosso, 2002), but serves to build community among individuals along the margins of society to challenge traditional views and beliefs concerning the oppressed.

Unique Voice of Color

One of the basic tenets of critical race theory asserts that people of color have a unique voice (Delgado & Stefancic, 2001). This historical notion of a collective voice relays the experiences with oppression people of color have endured that white people cannot fathom. Black people have a unique and critical perspective on the obstacles they have overcome throughout their educational experiences. They are the only ones who can share the details of their journeys through their stories and voices.

Keffrelyn Brown (2014) utilized a critical race theory posture to conduct an educational analysis of literature related to preservice teachers of color and teacher education in the United States. Brown (2014) asserts that whiteness is held as a cultural, economic, and sociopolitical force that continues to perpetuate hegemony on a national and global scale. Like Brown, Ashford, et al., (2017) insist that the perspectives and voices of Black students and teachers of color must be amplified to create academic spaces that will provide quality teacher development for sustaining these individuals once they enter the teacher workforce. Not only will they need to persist in racially inequitable peer environments, they will need to be able to encourage their students in the same vain.

References

Anderson, R. (2007). Being a mathematics learner: Four faces of identity. The Mathematics Educator, 17(1).

Bell, D. (1980). Brown v. Board of Education and the interest-convergence dilemma. Harvard Law Review, 93(3), 518-533. doi:10.2307/1340546

Berry, T., & Candis, M. (2013). Cultural identity and education: A critical race perspective. Educational Foundations, 27, p.43-64.

Berry, T., & Stovall, D. (2013). Trayvon Martin and the curriculum of tragedy: Critical race lessons for education. Race Ethnicity and Education, 16(4), 587-602. doi:10.1080/13613324.2013.817775

Boaler, J. (2002). Learning from teaching: Exploring the relationship between reform curriculum and equity. Journal for Research in Mathematics Education, 33(4), 239-258. https://doi.org/10.2307/749740

Cho, S., Crenshaw, K., & McCall, L. (1991). Toward a field of intersectionality studies: theory, applications, and praxis signs. Intersectionality: Theorizing Power, Empowering Theory (Summer 2013), Vol. 38, No. 4, pp. 785-810.

Crenshaw, K. (1991). Mapping the margins: Intersectionality, identity politics, and violence. Stanford Law Review, Vol. 43, No. 6, pp. 1241-1299.

Delgado, R., & Stefancic, J. (1993). Critical race theory: An annotated bibliography. Virginia Law Review, 79(2), 461-516. doi:10.2307/1073418

Delgado, R., & Stefancic, J. (2001). Critical race theory an introduction. NYU Press.

Delgado, R. (2014). Storytelling for oppositionists and others: a plea for narrative. In Delgado, R., & Stefancic, J. (Eds). Critical Race Theory: The Cutting Edge. Philadelphia: Temple University Press. http://ebookcentral.proquest.com

Demoiny, S.B. (2017). Living the change they seek: Social studies teacher educators who incorporate race into the curriculum. (Doctoral dissertation, University of Tennessee, Knoxville).

Delpit, L.D., & Ladson-Billings, G. (1996). The dreamkeepers: Successful teachers of African American children. Contemporary Sociology. Jossey-Bass Publishers. https://doi.org/10.2307/2077209

Delpit, L. (2006). Other People's Children: Cultural Conflict in the Classroom. The New Press.

Delpit, L.D. (2012). "Multiplication is for White People": Raising Expectations for Other People's Children. The New Press.

Dixson, A.D., & Rousseau, C.K. (2006) And we are still not saved: critical race theory in education ten years later. Race Ethnicity and Education, 8:1, 7-27. DOI: 10.1080/1361332052000340971

Durant, W.L. (2013). Seeing through the eyes of African American female math teachers: Their counter-narratives and how it influences their math identity. (Doctoral dissertation, ProQuest).

Egalite, A.J., Kisida, B., & Winters, M.A. (2015). Representation in the classroom: The effect of own-race teachers on student achievement. Economics of Education Review, 45, 44-52. https://doi.org/10.1016/j.econedurev.2015.01.007

Gay, G. (2003). Deracialization in social studies teacher education textbooks. Critical Race Theory Perspectives on Social Studies, 123-148.

Gay, G. (2018). Culturally Responsive Teaching: Theory, Research, and Practice. Teachers College Press.

Grant, C.A., & Sleeter, C.E. (1986). Race, class, and gender in education research: An argument for integrative analysis. Review of Educational Research, 56(2), 195-211.

Gutiérrez, R. (2013). The sociopolitical turn in mathematics education. Journal for Research in Mathematics Education, 44(1), 37-68.

References

Gutstein, E., Fey, J.T., Heid, M.K., Deloach-Johnson, I., Middleton, J.A., Larson, M., … Tunis, H. (2005). Equity in school mathematics education: How can research contribute? Journal for Research in Mathematics Education, 36(2), 92–100.

Hill, C., Corbett, C., & St. Rose, A. (2010). Why So Few? AAUW.

Joseph, N.M., Hailu, M., & Boston, D. (2017). Black women's and girls' persistence in the P–20 mathematics pipeline: Two decades of children, youth, and adult education research. Review of Research in Education, 41(March), 203-227. https://doi.org/10.3102/0091732X16689045

Kanny, M.A., Sax, L.J., & Riggers-Piehl, T.A. (2014). Investigating forty years of STEM research: How explanations for the gender gap have evolved over time. Journal of Women and Minorities in Science and Engineering, 20(2), 127-148. https://doi.org/10.1615/JWomenMinorScienEng.2014007246

Kolo, Y.I. (2016). Experiences of African American young women in science, technology, engineering, and mathematics (STEM) education. (Doctoral dissertation, Walden University).

Ladson-Billings, G. (1995). Toward a theory of culturally relevant pedagogy. American Educational Research Journal, 32(3), 465-491. https://doi.org/10.3102/00028312032003465

Ladson-Billings, G., & Tate IV, W. (1995). Toward a critical race theory of education. Teachers College Record, 97(1), 47-68. https://doi.org/10.1080/10282580701850413

Ladson-Billings, G. (Ed.). (2003). Critical race theory perspectives on the social studies: The profession, policies, and curriculum. IAP.

Levinson, B.A., Gross, J.P.K., & Hanks, C. (2011). Beyond Critique: Exploring Critical Social Theories and Education. Florence: Taylor and Francis.

Loewen, J.W. (1995). Lies My Teacher Told Me: Everything Your American History Textbook Got Wrong. New York: New Press.

Lynn, M., Yosso, T.J., Solórzano, D.G., & Parker, L. (2002). Critical Race Theory and education: Qualitative research in the new millennium. Qualitative Inquiry, 8(1), 3-6.

MacKinnon, C.A. (2013). Intersectionality as method: A note. Signs: Journal of Women in Culture and Society, 38(4), 1019–1031.

Martin, D.B. (2012). Learning Mathematics While Black. Educational Foundations, (Winter/Spring), 4766.

McGee, E.O. (2015). Robust and fragile mathematical identities: A framework for exploring racialized experiences and high achievement among black college students. Journal for Research in Mathematics Education, 46(5), 599-625. https://doi.org/10.5951/jresematheduc.46.5.0599

Paris, D., & Alim, H.S. (2014) What are we seeking to sustain through culturally sustaining pedagogy? A loving critique forward. Harvard Business Review, 81(1), 85-137.

Oates, G.L.S.C. (2003). Teacher-student racial congruence, teacher perceptions, and test performance. Social Science Quarterly, 84(3), 508-525.

Struchens, M.E., Johnson, M.L., & Tate, W.F. (2000). Changing the faces of mathematics: Perspectives on Blacks. National Council of Teachers of Mathematics.

Tang, H., Chen, B., & Zhang, W. (2010). Gender issues in mathematical textbooks of primary schools. Journal of Mathematics Education, 3(2), 106-114.

United Nations Educational, Scientific, and Cultural Organization (UNESCO) Institute for Statistics. (2017). http://uis.unesco.org/en/topic/teachers

U.S. Census Bureau. (2010). Quick facts: San Antonio City, Texas. https://www.census.gov/quickfacts/fact/dashboard/sanantoniocitytexas/POP060210

U.S. Department of Education, National Center for Education Statistics. (2016). The state of racial diversity in the educator workforce. Washington, D.C. https://doi.org/10.1017/CBO9781107415324.004

Walker, E.N. (2015). Beyond Banneker: Black Mathematicians and the Paths to Excellence. Suny Press.

References

Wing, A.K. (1990). Brief reflections toward a multiplicative theory and praxis of being. Berkeley Women's LJ, 6, 181.

Wing, A.K. (1997a). Brief reflections toward a multiplicative theory and praxis of being. In A.K. Wing (Ed.), Critical Race Feminism: A Reader (pp. 27-34). New York, N.Y.: New York University Press.

Wing, A.K. (Ed.). (1997b). Critical Race Feminism: A Reader. New York, N.Y.: New York University Press.

Zinn, H. (1990). A People's History of the United States. New York: Harper & Row.