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Rehumanizing Mathematics for Black, Indigenous, and Latinx Students

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Shades of Blackness: Rehumanizing Mathematics Education through an Understanding of Sub-Saharan African Immigrants

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The mathematics education experiences of Sub-Saharan African (SSA) immigrants in the United States remain under-researched, even as this population continues to increase. As a result of this limited base of research literature, the experiences of African immigrants are often conflated with those of African Americans, a practice that ignores their culture and conceals their African, Black, and immigrant identities. Inspired by characters from novels—Yaa Gyasi’s *Homegoing* (2016) and Chimamanda Ngozi Adichie’s *Americanah* (2013)—this chapter examines the schooling experiences and the positioning of SSA immigrants in mathematics education as a way to highlight the complexities of attending to multiple versions of Blackness for classroom teachers. Additionally, the first co-author is an African immigrant from Nigeria who has lived in the United States for ten years studying mathematics education and can speak to the experience. The second co-author is an African American high school mathematics teacher discussing her experiences with African immigrant students in her high school. This work seeks to expand our understanding of Blackness and the Black experience in mathematics education and to help teachers see their Black students as more than just a monolithic Black group, encouraging that recognition through the idea of the particularity of the African immigrant experience.

■ Oyemolade’s Story

“Algebra, geometry, FOIL, and parentheses.” What do these have in common? I first heard these words in 2002 when I emigrated to the U.S. from Nigeria to begin my undergraduate studies. Despite being educated in English while growing up in Nigeria and having English as my primary spoken language, I found myself having to relearn both the vocabulary and the symbology of mathematics in order to communicate in this supposed “universal language.” For example, Nigerians (as do most Africans) use brackets to signify both $()$ and $[]$, so this differentiation was also unfamiliar to me. Not only was this mathematics lingo foreign, I had also only studied maths (not math) instead of algebra, geometry, or calculus. These subsets of mathematics did not exist in my primary and secondary school education, given the integrated nature of the curriculum used during my schooling in Nigeria.

Upon arrival at my undergraduate institution in the U.S., my academic advisor recommended that I begin my mathematics requirements with college algebra because she “did not think I could handle calculus,” given that my incoming grades appeared quite low after the conversion from the Nigerian system. I am not sure how I found the courage to advocate for myself, but I demanded that I enroll in calculus because I had the appropriate foundation despite what my grades reflected. I was placed on academic probation before I began my course work, but after earning a 4.0 grade point average at the end of my first semester and being placed on the dean’s list the probation was lifted. Additionally, several of my cousins who emigrated to the U.S. and enrolled in K–12 schools were held back a grade level because the schools did not believe they could perform at grade level. This experience of being placed below ability is not limited to my family’s experience; it is a recurring issue as captured by Awokoya and Clark (2008). It was only years later that I realized that we were *racialized*. That is, our identities were made racial through social interactions, positioning, and discourse—because of our skin color (Nasir 2002; Waters 1999). Before coming to the U.S., I had not “believed myself to be Black.” (Ta-Nehesi Coates nuances the racial construction by using the phrase “those who believe themselves to be . . .” [Coates 2017].) I was not coming from a racialized society but one that emphasized ethnicity; therefore, my Yoruba identity took precedence over my Blackness.

After completing my undergraduate studies and earning a master’s degree in 2010, I relocated to South Africa to teach mathematics at a school with students from about forty-one African countries. As a result of my previous experience, it was important to me that students were placed in the correct level of mathematics class. I trusted students who said they felt prepared to be in an advanced mathematics class because of my prior experience with mathematics placement in the U.S. and from knowing the vastness of mathematics curricula across the continent. Nevertheless, I realize now that I focused primarily on students who exercised agency. I also realize that I made decisions about student placement based on the historical precedence of the student’s country of origin. For instance, if a Kenyan student asked to be moved up a level, I was more willing to allow this if prior Kenyan students had succeeded in the course. Both of these practices were problematic.

The students in my class were diverse culturally, linguistically, and mathematically. I allowed students to use the forms of mathematical representation that they learned in their home countries while also ensuring that they knew the representation validated by the Cambridge International Examination—the examining body to whom we were held accountable. Stated a different way, I was allowing students “access to both the culture of power and the power of culture” in mathematics (del Carmen Salazar, 2013, p. 145).

■ On the Need for Shades of Blackness

Statistics from the Pew Research Center (Anderson 2017) state that the African immigrant population is the fastest-growing immigrant population in the U.S., increasing by more than 40 percent from 2000 to 2013, with more than two million African immigrants living in the United States by 2015. More specifically, most members of this growing African immigrant population hail from Sub-Saharan Africa. The number of immigrants from SSA grew by 8 percent from 2014 to 2015 (Hernandez 2012). Considering this increase, and given the dearth of mathematics education research focused on African immigrants in the U.S. save for a few examples (e.g., Staats 2009), we sought to examine the schooling experiences and mathematics learning of

these students. In this chapter, we use two works of fiction, *Homegoing* (2016) and *Americanah* (2013), critically acclaimed books written by SSA immigrants centering SSA immigrant experiences in the U.S., as our starting point. Both books address the experiences of SSA immigrant students in U.S. schools by focusing on challenges encountered. These experiences of schooling can inform mathematics educators and mathematics teachers to rehumanize their mathematics experiences, experiences that have been dehumanized by racialization and cultural and linguistic conflation. Phakeng (2017) emphasized that discussions of immigrants in U.S. education tend to prioritize those who are English language learners, yet those who emigrated from primarily English-speaking countries with linguistic and cultural differences also need their stories to be highlighted, especially considering the racialization steeped in anti-blackness they face in the U.S., where racism is endemic (Delgado and Stefancic 2012).

We use the learning experiences of SSA immigrant characters from Yaa Gyasi's *Homegoing* and Chimamanda Ngozi Adichie's *Americanah*, Oyemolade's and Missy's stories, and what little is known from academic literature as means for demonstrating the ways in which African immigrant students have been experiencing mathematics education in the U.S. in dehumanizing ways. Attending to their experiences of racialization and cultural insensitivity, we end with suggestions that are worth considering along with an adaptation of a framework that can be used to better support rehumanization for the mathematics learning experiences of this growing and under-researched population of learners.

■ On Figure Hiding

Homegoing (2016) tells the story of the lineage of two Ghanaian stepsisters: one who lived out her life in Ghana and another who was kidnapped and sold into slavery to the U.S. The tale begins in the eighteenth century during the colonization of Ghana and follows the family lineage of each sister through to the twenty-first century, where two of their descendants meet on a college campus in the U.S. Though *Homegoing* is fiction, it illuminates the complicated lived experiences and the need for nuancing the various “shades of Blackness” of Black people living in the U.S. Likewise, *Americanah* (2013) depicts the story of a Nigerian family emigrating to the U.S. for educational pursuits. It follows the lead character, Ifemelu, on her journey as she experiences racism. Erika Bullock, critical mathematics educator, in her plenary talk at the ninth Mathematics Education and Society conference, proposed the use of intersectionality to avoid what she termed *figure hiding* in our scholarly pursuits on social justice (Bullock 2017). (Her term is a play on the title of the film *Hidden Figures* [Melfi 2016].) Similarly, Mamokgethi Setati Phakeng (2017) stated, “There is diversity among people who share the same race and so focusing only on visible diversity ignores this fact and treats silenced voices as a homogeneous group” (p. 20). To this end, our purpose in this chapter is to use our personal experiences and those of the characters in *Homegoing* and *Americanah* to highlight the figure hiding of SSAs who are Black, African, and immigrants whose cultures are silenced in mathematics classrooms, particularly given the current anti-immigrant climate in the U.S.

■ On African Immigrants in the U.S. Educational System

In *Homegoing* (2016), the character Marjorie is a Ghanaian immigrant in the U.S. Her English teacher, Mrs. Pinkston, asks Marjorie to write a poem about what it means to be African American. The following conversation ensued:

Marjorie: But I'm not African American.

Mrs. Pinkston: Listen, Marjorie, I'm going to tell you something that maybe nobody's told you yet. Here, in this country, it doesn't matter where you came from first to the white people running things. You're here now, and here black is black is black. (Gyasi 2016, p. 273)

While we do not disagree with this classification as Black because we do believe that *there is so much beauty in being Black* (as stated by by Tina Knowles in the “Tina Taught Me” interlude on Solange Knowles’s 2016 album *A Seat at the Table*), we highlight the danger of conflating the experiences of African Americans with that of SSA immigrants—experiences that could not be farther apart in reality (Allen, Jackson, and Knight 2012). We use the charge stated by Allen and colleagues (2012) that for “African immigrant students to benefit from pedagogy that is culturally relevant for them, teachers must recognize the diversity among and within people of African descent, particularly in terms of their identities” (p. 3).

Kumi-Yeboah and Smith (2016) investigated the school learning experiences of sixty Ghanaian immigrants attending an urban public school and found that a number of factors contributed to their academic experiences. Though Ghanaian immigrant students conveyed various views of their U.S. schooling experiences, they expressed that teachers would often categorize them as African American, as in Marjorie’s story in *Homegoing* (Kumi-Yeboah and Smith 2016; Gyasi 2016). Here we see an example of figure hiding—though they are receiving some mathematics support, their cultures are not highlighted and epistemologies not attended to in their mathematics learning. With regards to mathematics learning, specifically, the Ghanaian immigrants referenced being successful in mathematics in the U.S. because of their Ghanaian mathematics learning experiences. One student stated “I would say that I have good grades in all of my science courses and mathematics because I studied most of the topics in Ghana before coming to the States. I have good grades in school because I work hard and want [*sic*] to proof [*sic*] to those who made fun of me when I first came to the States wrong” (Kumi-Yeboah and Smith 2016, p. 13). Here, this student utilizes some of the advanced aspects of the Ghanaian mathematics curricula to his advantage.

SSA immigrants have at times been viewed as needing special education services and may also be pushed back one grade level (Awokoya and Clark 2008), as captured in Oyemolade’s story. In *Americanah* (2013), the main protagonist is a Nigerian woman who came to the U.S. to study and who lived briefly with her aunt and nephew, who had emigrated some years before when her nephew, Dike, was just a baby. Adichie recounts a story where Auntie Uju and Ifemelu discussed a phone call from Dike’s middle school teacher recommending him for special education services due to his “aggression.” Auntie Uju refused, because she felt that Dike was being singled out as one of only two Black children in the entire school and because she had been warned by a fellow African immigrant mother that this would happen.

Adichie (2013) also speaks to the notion of mathematics education being more advanced in Nigerian schooling than it is in the United States through dialogue between Ifemelu and Dike. The conversation progresses as follows:

Once, she [Ifemelu] asked Dike what he had done in school before summer, and he said “Circles.” They would sit on the floor in a circle and share their favorite things. She was appalled. “Can you do division?” He looked at her strangely. “I’m only in first grade, Coz.” When I was your age I could do simple division. (p. 138)

Ifemelu found it silly that Dike’s teacher had given students homework coupons and that he was not learning more advanced mathematics, so she spent the rest of that summer teaching him *maths*. She focused on long division and made sure he was proficient, because she believed he would have learned it by this point had he been in Nigeria. In fact, Ifemelu had very strong views on American education in general. She stated that “American children learned nothing in elementary school” (p. 138). As a result of this interaction, Dike later found mathematics to be easy and attributed this change to his summer experience with Ifemelu. Though we know that the American elementary experience can be quite valuable, this point was used to illustrate Ifemelu’s perspective. Recognizing that *Americanah* is fiction, we use this narrative as an illustrative example of what Kumi-Yeboah and Smith (2016) highlighted earlier: The ways that mathematics is taught in both Nigeria and Ghana are not necessarily deficient but, in some ways, are more advanced. This story also shows the high level of standards held and is a counternarrative to the racialization and deficit mindset approach that colors many of the SSA immigrant experiences previously described.

■ On Rehumanizing Educational and Mathematics Learning Experiences

According to Freire (2003), humanizing pedagogy has the power to alter and change oppressive systems such as those found in schools. This can only happen if the pedagogy builds upon students’ cultural and linguistic repertoires, centers student experiences, focuses on raising students’ critical awareness and higher-order thinking skills, and emphasizes trust between the teacher and students (Zisselsberger 2016). However, Black people (a racial categorization that includes members of the African diaspora) in the U.S. are continually dehumanized in their interactions with social institutions such as schooling (Langer-Osuna and Nasir 2016). It can be argued that Black students and, even more so, SSA immigrants have been coerced to divest themselves of their cultural resources and assimilate in order to succeed in U.S. public schools, as is also the case with Mexican immigrant students (del Carmen Salazar 2013). In order for this to change, we must consider the role of race, culture, and identity in education and must include the ways in which society has functioned to dehumanize those who have been considered “Other.” Schools and education must be viewed as sites of rehumanization where high expectations are held for Black students in conjunction with a caring and supportive environment as students learn to deal with racism and racialization in broader society (Langer-Osuna and Nasir 2016).

■ Missy’s Story

“It’s clear that we have some white classes and some brown classes in this school.” As the only African American teacher at this high school, I was taken aback when I heard this comment. It came from a White colleague at the suburban area high school where I currently teach mathematics in response to her spending several days observing teachers throughout the building. During my seventeen years of teaching there I have worked with students from many backgrounds, including a number of students from Nigeria, Ethiopia, Cameroon, Uganda, and Zimbabwe. I have observed that these students are rarely placed in advanced or honors track mathematics courses and that those who are placed in on-level mathematics courses are moved into the remedial track at some time throughout their tenure in high school.

The dehumanization, racialization, and devaluing of their cultural funds of knowledge (Moll et al. 1992) begins at enrollment, as parents and students are left with no other option to select for race and ethnicity categories other than to mark “African American.” These placement experiences both racialize African immigrant students and/or make them invisible as learners with distinct characteristics and cultural needs. When it comes time to select the student’s schedule and mathematics class, the counselor asks to see a transcript from any previous schooling and uses that to select the mathematics course. This is not always easy, because courses in Cameroon or Nigeria are not always delineated by content (algebra, geometry, precalculus, etc.), as was evident in Oyemolade’s story. Courses at this high school are not only classified by content, they are also stratified by level (remedial, on-level, honors, advanced placement). This makes for a confusing selection process that culminates with having the parents and students look through a series of textbooks used at the high school to decide which content the student is familiar with. Again, when an integrated approach is taken in another country and not at the receiving school, it is quite possible that chunks of familiar content will be scattered throughout several texts, leaving the parent, the student, and the counselor with a dilemma. The resolution is usually to place the student in a mathematics course that is below their needed level so as to not overwhelm them. For example, if a student is placed in geometry and encounters a mathematics problem that requires factoring, content learned in a previous algebra course, this student is seen as not having the necessary prerequisite skills. Many of my colleagues have not resorted to culturally sensitive ways of resolving issues like this. It is simply recommended that the student is misplaced and they are then moved to a lower-level course.

I recall having one Cameroonian student, Abeni (a pseudonym), for whom this was the case. She and her parents were devastated by her being told that she “could not handle” the mathematics in her geometry honors course. Everything that she had previously believed about herself as a confident mathematics learner was being challenged in this new cultural context as she was moved from geometry honors into my geometry class. Due to my previous conceptions of the general experiences of African immigrant students in this school context, I did my very best to work with her and her parents and help her to see her strengths as a mathematics learner. This included providing multiple and varied opportunities to assess her mathematics knowledge; open and regular communication with both her and her parents via phone, email, and parent-teacher conferences; and using teaching methods such as the flipped classroom model that allowed for an increase in class time spent talking with students about mathematical ideas. In a card given to me at the end of year, she wrote, “Thanks for helping me do much better in math than I had thought possible and for not making me feel stupid.” It was all that I could do to keep from crying, knowing that the previous ordeal had made a student who previously saw herself as a competent mathematics learner “feel stupid.”

Having taught my entire career at this high school, it would be quite easy to begin to operate under the myth of meritocracy and the veil of whiteness. It would also be quite easy for me to have projected an African American sense of Blackness onto the SSA immigrant students as well. Though I cannot be certain, I do not think that I did this for Abeni. If anything, I might have invited Abeni to attend a Black Student Union (BSU) meeting not fully recognizing that those gatherings largely address issues of being Black in the U.S. context. This is not to say that she should not have attended a BSU meeting, but perhaps I could have also guided her in forming an African Student Alliance with the other SSAs at the high school. Over the years, I have worked to be more self-reflective and aware of my own projection of Blackness onto students. I also ask

many questions of my students and their parents in an effort to better understand their needs and perspectives. Furthermore, I ask questions of my colleagues to challenge their assumptions and to prompt them to consider the impact of our policies and procedures. This, I believe, is a step in the right direction to combatting the racialization of SSA immigrant students and others. Though change is difficult and slow, it is for Abeni and many other students with similar stories that I continue to push for changes within our current system and rehumanizing the process.

■ On Shading Blackness: Toward Rehumanizing Mathematics Education for SSA Immigrant Students

Does life imitate art or does art imitate life? As we read Gyasi’s *Homegoing* and Adichie’s *Americanah*, we reflected on our own experiences as an SSA immigrant learning mathematics in the U.S. and as an African American person teaching mathematics to SSA immigrants. The stories and experiences shared in these novels brought issues of racialization and cultural insensitivity in U.S. schooling to the forefront. We turned to mathematics education literature for empirical documentation of these experiences even though, as we mentioned earlier, there is a dearth of research in mathematics education in the U.S. related to the experiences of SSA immigrants. We find this to be problematic because of this group’s intersectional identities as Black, African, and immigrant. To avoid *figure hiding* (Bullock 2017), it is important that we, as a scholarly community, strongly consider this group, given its prominent identity triad. Other research has shown that this population is vulnerable in U.S. schooling (Allen, Jackson, and Knight 2012; Awokoya and Clark 2008; Kumi-Yeboah and Smith 2016; Njue and Retish 2010), so there is reason to believe that they are not being well served in mathematics education. Recall that in *Homegoing*, Marjorie’s teacher stated that “black is black is black,” and although we agree with this statement in the U.S. context, having this attitude is problematic because it hides the rich and distinct cultures of this diverse population given the many shades of Blackness that exist. These shades of Blackness come from the creation of African diasporas resulting from both immigration and the Trans-Atlantic slave trade (e.g., SSA immigrants, Afro-Caribbeans, Afro-Latinx, Jamaican Americans). Although our goal in writing this chapter is to point out the figure hiding of SSA immigrants in mathematics education research in the U.S., we offer a few suggestions for classroom teachers and researchers as we seek to rehumanize mathematics education for these students.

First, the U.S. education system employs a narrow view of citizenship that trickles down into the mathematics classroom. For example, according to Bajaj and Bartlett (2017), U.S. social studies classes are focused on preparing all students (including immigrants) to be citizens, not of their country, but of the U.S. This, in turn, affects classroom discourse, where students like Marjorie are seen only as American Black and thus are stripped of their citizenship and all that it entails. Second, it needs to be acknowledged that schooling in the U.S. context is normed to White, middle-class values with a focus on standards, including high-stakes testing, and assumes that most or all students are college bound (Bajaj and Bartlett 2017). As such, symbology is normed and many other ways of knowing and representing mathematical ideas are marginalized, including the integrated curricula previously experienced by many SSA immigrant students. In order to better serve SSA immigrants and all students, a rethinking of the foundational assumptions of U.S. schooling is in order (Bajaj and Bartlett 2017). Milner (2007) conceptualized a framework for educational researchers engaged in research centering race and culture. We posit that aspects of this framework are applicable for research and practice in mathematics education.

It could aid in thinking about these fundamental assumptions in mathematics education, what is normalized, and whose epistemologies matter. Milner's framework suggests the following: *researching the self*, *researching the self in relation to others*, *engaged reflection*, and *shifting from self to the system*. Taking each in turn, we conclude by examining the role that these concepts could potentially play in the rehumanization of mathematics learning experiences for SSA immigrants.

Researching the self and the self in relation to others could be both for individual mathematics educators and researchers as well as for the broader mathematics education community as a whole. This could consist of a deepening of one's knowledge of their own race and culture and of those in the communities they endeavor to educate (Milner 2007). For the mathematics community, more broadly, this includes exploring the ways in which it is racialized, gendered, and exclusionary, contrary to the widely accepted notion of neutrality with regard to race and culture (Joseph, Hailu, and Boston 2017). The dialectical process of researching the self and the self in relation to others serves to acquire the cultural knowledge necessary to accurately interpret the experiences and expressed commentary of SSA immigrant students and to disrupt deficit discourses and the practices operationalized by them. Consider Missy's story: As an African American teacher, part of what was necessary was for her to reject the *black is black is black* narrative, explore her own positionality, and address the ways in which her student's experiences were markedly different in order to better serve her. Operationalized, this could look similar to Oyemolade's demonstration of advocacy, without which dehumanizing practices would continue.

Engaged reflection would require mathematics educators and members of the broader mathematics education community to create opportunities to work together with the members of various communities that they serve—in this case, SSA immigrant students and families—in order to understand their experiences and their shades of Blackness. These voices and perspectives, their counterstories, should deepen the understanding of their experiences and the ways in which they are racialized, dehumanized, and marginalized (Milner 2007). Such validation for their counter-stories helps to decenter the normalized voice, no longer privileging one over the other (Solorzano and Yosso 2001). Therefore, this would allow mathematics educators and mathematics teachers alike to explicate the experiences of SSAs, thus avoiding the “danger of a single story” (Adichie 2009) and creating awareness of the varied shades of Blackness that exist. Additionally, the connection to parents and families would provide opportunities to draw on their funds of knowledge (Moll et al. 1992) and enrich the mathematics learning experiences for all.

When **shifting from self to the system** or from the individual classroom level to widespread practice and policy, there are a myriad of considerations, such as curricula, student placement and tracking, and referrals to special education, as was mentioned in Adichie's *Americanah* and elsewhere. Bajaj and Bartlett (2017) posit that a critical transnational curriculum could address the problems encountered by immigrant students. As such, they promote the inclusion of heterogeneous grouping, inquiry-based learning, a social justice orientation, and building on culturally relevant and sustaining pedagogies. As Bajaj and Bartlett (2017) note, “Pedagogies are deeply cultural” (p. 29). Therefore, even the use of pedagogies such as social justice mathematics, project-based learning, and inquiry-based learning have cultural elements that are often unfamiliar to SSAs. As a result, mathematics educators and teachers need to be mindful of this. Furthermore, Bajaj and Bartlett suggest avoiding tracking in order to allow immigrants to thrive. Thus, schools like the one where Missy teaches should embrace diversity as a valuable tool for students to express their unique identities and in order to allow for an easier transition. Moreover, the students should be allowed the opportunity and space to develop projects related to their cultural contexts.

Another consideration would be for schools to amass a small library of textbooks from other countries. As in Missy’s story, students were asked to look through the school’s textbooks to help decide placement. However, exploration of and familiarity with textbooks and curricula from other countries could only serve to expand the knowledge base of mathematics educators, allow them to understand mathematical symbology and nomenclature in these countries, and aid them in understanding and promoting broader engagement in mathematics.

■ On Embracing Sankofa

Sankofa is a word from the Twi people of Ghana that roughly means “going back to retrieve what was lost” (Temple 2010; Watson and Knight-Manuel 2017). In this chapter, we embraced the spirit of Sankofa by reflecting on our past experience as an SSA immigrant mathematics student in the U.S. (Oyemolade) and an African American teacher of SSA immigrant mathematics students (Missy) to inform the mathematics education community of the dehumanizing ways SSAs have experienced mathematics in the U.S. Our expressed purpose was to use our personal experiences, those from the characters in *Homegoing* and *Americanah*, and existing empirical research to highlight the figure hiding of SSAs living at the intersection of Black, African, and immigrant, whose cultures are silenced in mathematics classrooms. Drawing on literature from sociology and educational research, more broadly, we were able to illustrate some ways in which SSA immigrant students with English proficiency experience the U.S. schooling context, though we do not know nearly enough about how they experience mathematics learning. As we look forward, we hope to conduct an empirical study with SSAs having English proficiency—heeding Phakeng’s (2017) call—in Missy’s school to add to this body of literature. Given that our goal is to further rehumanize SSAs’ experiences, we will embrace humanizing research (Paris 2011) methodologies that emphasize the “building of relationships of care and dignity for both researchers and participants” (p. 140). To further nuance the discussion, Watson and Knight-Manuel (2017) also indicate that teachers have placed SSAs as “Black model minorities,” and we seek to uncover this practice in our study. For us, this practice of creating a chasm between SSAs and their African American counterparts adds to the dehumanization of mathematical experiences and should be addressed in this work.

In closing, we purport that shades of Blackness is essentially doing intersectional work. Kimberlé Crenshaw, a legal studies and intersectionality scholar, expressed it well when she stated that “treating different things the same can generate as much inequality as treating the same things differently” (Crenshaw 1997, p. 285). Therefore, it is important that we acknowledge the Black, African, and immigrant identities that SSA immigrant students hold and endeavor to unhide them, thus rehumanizing their mathematics learning.

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