Highlighting Community Cultural Wealth of Black Students Raised in the United States by Parents Born and Raised Abroad

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Abstract

The number of students with multicultural experiences are growing in the United States. We define multicultural experiences as the multiple cultures that students experience in their early life and through family, which differs from the culture at their higher education institution. Many students immigrate to the US with their families after spending formative years in other countries, which gives them unique perspectives on multiple cultures. Multicultural engineering students have a different understanding of engineering from those without such experiences. These experiences both provide these students with certain advantages in engineering and present challenges in their educational pursuits. Examining both advantages and challenges provides an opportunity to understand these students' strengths and adaptation strategies. Engineering is a field that requires new thoughts, insights, and opinions to advance. Their meaningful life experiences (particularly their multicultural experiences) can bring new light to issues in engineering as well.

The study utilizes data from a larger mixed-methods study of Black students in engineering for in-depth interview transcripts, survey data, and an identity circle artifact. Two cases were purposefully selected for the current study – both participants were raised by African parents and had an additional international experience in a predominantly White country before studying engineering in the US. Both participants used this third point of reference to reflect on and give a rich description of their experience in the US. Through qualitative analysis of these cases, we will address the question: In what ways do Black students who are first- or second-generation immigrants from Africa and have studied abroad leverage community cultural wealth in engineering in the US?

We use Yosso's Community Cultural Wealth (CCW) framework to highlight the strengths these students leverage in engineering. CCW is an asset-based framework developed to highlight the strengths of the students from Communities of Color. There are six assets used as a guiding lens to inform research in these communities: familial, social, aspirational, navigational, resistance, and linguistic capital that students bring from their familial and community background. This framework names and categorizes the numerous skills Students of Color have obtained through lived experiences and how the students are able to be successful in academia. Furthermore, students have the ability to utilize these capitals to their advantage in order to be successful beyond academia.

Exploring the CCW of Black immigrant students from African countries will give researchers a better understanding of the assets and strengths these students possess as well as the challenges they face. Through an examination of the CCW and various forms of capital for two Black immigrant students, we will emphasize the strengths of students with multicultural experiences in the hopes that they will be further valued and supported by university administrators.

Introduction

There is a persistent concern surrounding representing diverse groups in science, technology, engineering, and mathematics (STEM) in the United States [1]. Additionally, ABET's accreditation is aimed at producing graduates who are prepared to enter the global workforce with the ability to succeed and thrive in diverse and inclusive environments [2]. STEM professions require imagination and innovation which is easier to achieve when persons with diverse backgrounds and experiences collaborate and work toward a common goal. These underrepresented minority students face special challenges in these fields [3]. These challenges require an asset-based, cultural capital approach to analyze the ways in which students seek support. In this research study we look at the various abilities Black first- and second-generation students in engineering possess and have obtained based on their upbringing overseas and in the United States, the cultural differences they face, their family history, and how these factors shape their approach and ultimate success in engineering.

Background

There continues to be a lack of information surrounding first- and second- generation American students in STEM. According to the Immigration Initiative at Harvard, persons born outside of and immigrate to the United States are considered first-generation. Persons considered second-generation are those who were born in the United States, but whose parents were born abroad [4]. To fully maximize the United States' STEM potential, society needs to put more effort into understanding people from unique and diverse backgrounds so that their solutions are represented in STEM. In addition to this, it is important to analyze the strengths and assets of the first- and second- generation American students in STEM majors. This can forge a path which following generations as well as future immigrants are able to follow as STEM related fields were not developed with them in mind.

Theoretical Framework

Community Cultural Wealth (CCW), an asset-based approach proposed by Yosso [5], was chosen as the theoretical framework to analyze the interviews. CCW is based in Critical Race Theory and is often used to dispute conventional forms of cultural capital that exist in White, middle-class environments. This theory sets out to explain that People of Color have a unique set of capitals that can be used as a "guiding lens that can inform research in Communities of Color" [4]. Additionally, CCW is utilized in an attempt to "nurture and empower" those who belong to these communities [4], [5], [6]. Yosso's theory outlines six main capitals: familial, social, linguistic, resistant, navigational, and aspirational.

For the purposes of this research we will focus on familial and social capital as these capitals were found in abundance in both interviews. Familial and social capital are closely related because they both reflect a sense of community. These capitals differ, however, in that familial capital is concerned with cultural knowledge that pertains to a sense of community history as well as memory and cultural intuition [7], [8]. Furthermore, familial capital is nurtured by immediate and extended family which includes, but is not limited to, grandparents and friends.

From these ties and relationships, we learn the importance of remaining connected to one's community and its resources [4] . The people these ties form embody "lessons of caring, coping, and providing… which inform our emotional, moral, educational, and occupational consciousness" [9], [10], [11], [12], [13]. This consciousness can be nourished through "sports, school, religious gatherings, and other social settings" [4]. Social capital, however, pertains to networks of people and community resources which "can provide instrumental and emotional support" [4], [14], [15]. Additionally, according to CCW, People of Color use their social capital to obtain education and employment [4].

Literature Review - Community Cultural Wealth

The literature studied for this research included topics on social capital, community cultural wealth, social media's influence on community cultural wealth.

Samuelson and Litzler [16] focused on the ways familial, aspirational, resistant, and navigational capitals contributed to Black and Latino students' persistence. This study is particularly important in that the writers directly address and apply an asset-based approach to understanding underrepresented students. The writers mention that Students of Color who attend PWI engineering programs typically have different cultural values than those of their White peers and discuss how these Students of Color navigate the systems at their PWI. Researchers also examined the intersections of these two races to see what they have in common in terms of CCW [16].

Smith [17] focuses on understanding how families and communities aid Black, male engineering students during their time in college and how to support future Black engineering students. Five forms of capital (all except linguistic) were applied to a focus group of students from sophomore to senior year across six engineering disciplines. The authors found that Black men are greatly aware of what is expected of them regarding outreach and academics, though her findings should not be used to make broad generalizations about the Black community. Deficit framing is challenged by providing evidence of how Black families utilize CCW to support their sons in their engineering journey [17].

Jimenez [18] provides a participatory critical ethnography where she worked with an elementary school teacher to learn about the applications of CCW in an elementary school setting. The author uses critical and cultural pedagogies (acknowledging oppressive structures in schools within the larger political economy) and CCW. This study was over the course of one academic school year and two summers where the author was a participant - observer; she transcribed then developed activity logs, made analytic comments, and built preliminary connections between data sources. The study found that there were varied ways that the teacher and her students engaged in CCW; autoethnographic counterstories were found to have helped normalize Latina/o norms [18].

Guzmán and colleagues [19] focus on Latino immigrant parents' perceptions of the contributions they have made to their children's educational presistence. The researchers utilized community cultural wealth and referenced CCW, but noted that not much research has been done on how parents conceptualize and transmit this capital to their children. Participant recruitment occurred

over the phone, by email, and by the use of fliers; those who expressed interest in the study participated in a focus group which were conducted in Spanish and later translated into English. This research found that among the six capitals, resistant and navigational capital played a significant role in how parents navigated roadblocks in the school system. The authors introduced a new type of capital, emotional intelligence, which they defined as the ability for one to regulate their emotions in order to direct their thoughts and actions [19].

Brown et al [20] focus on high school students' use of social media to obtain information on events, activities, and admissions relating to college. The researchers interviewed 24 students (13 women and 11 men) from Detroit area high schools using a semi- structured interview protocol. Brown then interpreted this data using the CCW framework. They found that students' use of social media fostered social, linguistic, navigational, aspirational, and resistant capital and also found that these capitals were not mutually exclusive. Students reported that social media gave them a more realistic view of college life in terms of struggles, highs, lows, or any experience that deviates from the stereotypical, "perfect" college brochure advertisement. These researchers also noted a new type of capital called "platform switching" where students described switching between social media platforms when talking to family and friends; this is where students were able to discern what information was useful and which information wasn't [20].

The literature review establishes the current state of knowledge by explaining the various ways CCW is utilized in research. CCW was applied to university aged students as well as elementary and high school aged students. Researchers are able to pinpoint gaps that exist in current asset-based approach research by applying CCW to different age and race demographics. For the purposes of this study, we aim to address the ways in which college aged students activate their familial and social capitals. Furthermore, the literature review stands to give a broader context of current research and understanding. This can also demonstrate the significance and importance of research findings in this study.

Methods

This project emerged from a larger project utilizing interviews with 79 Black students from four institutions in the southeastern United States. Each student interviewed received $50 to participate in the study with interviews ranging from 60 - 120 minutes. The analysis will focus on the interviews of two male undergraduate students in engineering.

Positionality

While conducting this research I (first author) was looking for similarities and differences between my upbringing, ideas of success, parental expectations, and general approach to academics. I found that the students we studied not only had similar approaches to mine, but they were also able to bring to light experiences and ideas I had not previously considered. A few of these included the impact of family finances on their education and "beating the odds". These students were able to consolidate their homelife experiences with the things they learned from

other cultural approaches which they used to their advantage to ensure their own versions of success.

As a South African woman growing up in the United States, life at home differed from my experiences at school and away from home. Outside of my home there seemed to be a strong influence to adhere to American culture, however at home there was a strong influence from my parents to remain culturally South African. A few of these external influences came from friends, and school. From friends, these influences pertained to upbringing and parental expectations, and from school, ideas and standards of success. At home, my upbringing surrounded a lot around family and how one family member's education benefits everyone. My parents have always been proponents of education and the doors it can open which has shaped my work ethic. The students we researched helped me gain a better understanding of how I view my and others' approach to engineering and what defines success.

Coding and Analysis Procedures

During the analysis process researchers read through both interviews to familiarize themselves with the data [22]. Two main researchers were involved in the coding process. These researchers coded roughly three quarters of one interview together, and then coded the remainder of the same interview individually. Nearly 200 codes were created in the first pass of the first interview. These unique codes were then reduced to six collated codes for the codebook to capture the entirety of the first interview. Each of the original 200 codes that were combined in the codebook were discussed by the two main researchers over several days. Then the second interview was coded using only the six codes created in the codebook to check for any potential emerging themes that were not previously captured. Researchers concluded that the six codes from the codebook captured the main themes of both interviews. Several steps were taken to ensure the validity and reliability of the coding process. Peer debriefing both among the main researcher and the secondary researcher were used consistently throughout the coding process to check if the positionality of the first researcher was bracketed in both cases of the interviews [22]. The original manuscript of the findings was also disseminated among the larger researcher team, four additional members, to review for potential bias. Constant discussions of the emerging codes and codebook was also conducted by the two main researchers to ensure consistency and trustworthiness among the findings.

We chose to use an intrinsic case study where the intent was "to better understand the case" as mentioned in [23]. The subject of this research study has a personal interest to the main researcher outlined in the positionality statement. We also chose to bound the system as is necessary for case studies [22]. The bounds included students from the main study who were either first- or second-generation immigrants to the United States.

Selection of the cases

For the purposes of this study, we chose two students' experiences to analyze. While reviewing interviews we were looking for any indication of the students' having lived overseas. Being first- or second- generation American was an additional criteria for interview selection.

Researchers ultimately settled on James who has lived in countries in Europe and Canada and whose family is Nigerian. The second student chosen was Michael whose family is Senegalese. He has not lived overseas, however he has traveled abroad and stays connected with his Senegalese culture. We investigated how their upbringings and understandings and experiences stemming from international background influence their professional development and academic skills and experience. All names that are used are pseudonyms.

Findings

The analysis resulted in two primary findings being the main cause of certain beliefs held by each student. The students' background and homelife as well as understandings and experiences stemming from international backgrounds play major roles in how students approach professional development. Furthermore, this demonstrates how the participants utilize academic skills and experience to ensure the completion of their respective degrees. While several themes occured as researchers coded the interviews, familial and social capital were most abundant and therefore will be the main focus of this study. These stories reveal quotes from the data that show the findings.

James' Story

James is a male undergraduate student in engineering at a large PWI in the Southeast United States. James states that he is a "first generation American" who grew up in a single-parent, Nigerian household. He has lived in various places including countries in Europe, Canada, and the United States in addition to traveling to Nigeria as an adolescent. He spoke about how his homelife and having lived abroad influenced his decision to pursue a degree in STEM and the things that kept him motivated.

> "I can afford to not only help me and my new family live, but also being able to take care of my parents would be a big thing for me" - James

James outlines his home life and growing up with his mom and sister and not being very wealthy. He explains that his mom had trouble making ends meet. He details having "mov[ed] from one place to another" and "never really [having their] own house…even now". He says that seeing how other people in his part of town live compared to the upper class is astounding. James states that being financially sound and stable is difficult and feels as if the "odds are stacked" against him which he feels can hinder the start of his academic career. Additionally, he says that he feels the need to work harder to be successful. He attributes this struggle to a lack of resources.

While applying to college James considered a few different career paths but ultimately landed on engineering. He discussed how culturally important it is to his family that he considers becoming a medical doctor as Nigerians have a great appreciation for doctors. He expressed being open to the idea of studying other professions, too, including mechanical engineering and computer science. James decided that computer engineering was the best fit for him based on his high school extracurricular activities and courses. He felt as though computer engineering was equal parts hands-on and software development. He also felt that engineering would afford him the

opportunity to work with a diverse group of people, problem solve, and even allow for a well paying job.

James considered a number of universities based on various metrics. He attributes much of his success in the college application process to his high school English teacher and a fellow church member's recommendations. Ultimately James decided to attend a university that was a top engineering school, stating that it was "something [he] would love to do", but also within close proximity to his mother and sister.

James spoke about having lived in a diverse community in Canada where he "didn't really see Color at all" and described it as "a free place to live", though after choosing to attend a PWI he said, "this is the first time [he] really 'noticed', noticed Color at all". He notes, however, that he generally had a positive interaction with his instructors. He explained that "they treat [everyone] with respect… and they don't look at us [Students of Color] differently". He, however, affirmed that he does not find instructors encouraging. Because of this, James turned to his roommates and campus ministry at school for additional support. He said that initially branching out and making friends was difficult, but eventually he became comfortable with making new friends. James mentions that his campus ministry is one of his biggest support systems at school as they are always praying for him and encouraging him. Additionally, James says that his mother is his biggest support system; she encourages him frequently and reminds him of how proud she is of him.

James has used these support systems as motivation to continue his studies in engineering. He takes pride in using the skills he has acquired from his high school experiences and his interests to commit to a difficult major and striving toward becoming an engineer. He firmly believes that "anything is possible" and wants "to defy all odds" in his journey as an engineering student; he wants to show that Black students belong in engineering and are capable of being successful. James aspires to ultimately contribute to his job, be happy in the future, make a living, and be able to support his future family and even parents. He has taken the hardships moving and growing up in a single-parent household presented and used them to his advantage.

Michael's Story

Michael is also a male undergraduate student in a STEM major at a PWI in the Southeast United States. Michael was born in the United States and spoke about how his family's Senegalese and French background and having parents who lived and studied overseas influenced his decision to pursue a degree in STEM as well as the things that kept him motivated. Michael, a first generation American, describes that his parents reconvened in the United States after his father came to the US for college through a foreign exchange program and his mother studied in France.

> "I've always wanted to go back to Senegal, which is where my family's from and start maybe a school there or something" - Michael

Michael had offers to play baseball at college, however turned down these offers in order to pursue engineering. He attributes this decision to a number of factors. After a discussion with his parents and realizing the high risk that playing baseball poses, Michael decided to pursue a

“safer” option. He stated that he initially considered medicine as an option, although changed his mind to engineering after taking a physics course in high school. He also attributes this switch to there being a number of engineers on his mom’s side of the family and the “prestige or challenge of the major”. Additionally, Micheal chose engineering because he thinks it is an interesting way to make society better; he has hopes of going back to Senegal to start a school or “helping as much as [he] can”.

Michael's parents had acknowledged that he excelled in math and science and encouraged him to look into attending a large engineering intuition in the southeast where they thought he “could get in [and where] he should go” for school. He applied to two other institutions, but after realizing the additional support he would have through friends at the university his parents’ originally suggested, Michael ultimately decided on that one.

Michael notes that he has had a positive experience with the professors in his department. He states that the environment is open and instructors are willing to meet students and get to know them. Michael finds his professors to be encouraging and passionate about what they do which seems to be a motivator. Contrary to this, though, Michael stated that he has still met “some people that aren’t very welcoming towards other races” and even went as far to say that there have been people of the same race who have made fun of him too. Both cases resulted in Michael seeking support from other sources, such as friends and family. Michael heavily relied on his fraternity brothers stating, “once I found them, it was just so many people accepting of so many different cultures”; His fraternity was comprised of people from different backgrounds including Greek, French, Senegalese, Italian, and Tanzanian; Michael states he is “all about diversity” and he feels like he can “belong anywhere” and has also “found his group of friends”. He goes on to affirm that his comfort has increased and a big part of his success is having a good environment and strong support system from his friendships.

Discussion - Familial Capital

Familial capital proved to be a common theme between both students. James expressed that he did not grow up wealthy. Although the “odds were stacked” against him before having a chance to begin his academic career, he chose to pursue a degree in mechanical engineering. James attributes much of his success to his mother being supportive which highlights the activation of his familial capital. He continues to access this capital by choosing to remain close to his mother and sister when he chose a university close to home.

Although his mother attended college, Michael grew up watching his mother support their family as a caterer. Although this would appear to involve several types of capital, researchers chose to categorize it as familial capital. He seemed to use this as a driving force to continue his education, especially his mother’s willingness to “take a bold leap of faith” by moving across the world for a better life. Michael initially considered medical school, however he was influenced by the engineers on his mother’s side of the family to pursue an engineering career path. Michael saw the “prestige” of engineering from observing his family members and this encouraged him to pursue the same path. Additionally, Michael’s desire to help his community is considered familial capital. He aims to return to Senegal to establish a school or contribute significantly to his community.

In the analysis evidence suggests that both participants accessed his familial capital often. Michael and James relied on their respective mothers' support during their time in college. During this time both of their mothers encouraged the growth of their childrens' familial capital through their persistence and desire to support their families.

Discussion - Social Capital

Social capital was also a common theme among both participants. James mentioned that an important part of his college application success was his high school English teacher and a church member's recommendation. His social capital is highlighted here because of his connections and networking capabilities. While at college, James accessed his social capital in multiple ways, including the positive interactions with his professors and his peers. He activated his social ties and connections through his friendships and campus ministry.

Michael decided to attend a university based partly on the support he would receive from his friends. He relied on the friendships that came from his diverse fraternity and used that as motivation to continue at his institution. This highlights his connections and social ties to his university. Additionally, Michael greatly benefited from being surrounded by peers with similar backgrounds to his; he felt a sense of belonging and even considered his fraternity brothers his closest friends. This close relationship with his peers strengthened Michael's social capital by reinforcing his social ties and network.

Here, the evidence suggests that both students accessed social capital frequently. James relied on networking with members of the community such as church members and high school teachers to aid him while he applied to college. Meanwhile, Michael established relationships with his fraternity brothers who shared similar experiences to his. Both students were able to activate their social capital through these relationships and consequently bolster their respective social ties, networks, and connections.

We found that students who were raised overseas and in the United States draw mainly on familial capital and social capital in that they seek support from their families and social networks. These students showed a strong sense of familial and social capital which greatly benefited their persistence in engineering. These findings highlight the importance of familial capital in conjunction with social capital. CCW has been applied to various studies which illustrate and highlight engineering students' persistence and familial capital. According to Mwangi's "Ethnic Differences and Familial Influences on Academic Motivation of Black Collegians" [24], students take advantage of the main aspects of familial capital. Furthermore, family cohesion and support play an important role in the success and motivation of students [24], [25]. From this, students are able to bolster a sense of self and aspiration to be successful [25], [26].

Further research could continue to examine how combining other capitals with familial or social capital can assist and support students in their academic journey. These findings could help students build support networks and strengthen their familial and social capitals.

Conclusion and Limitations

The main takeaway is that students who have lived overseas and in the United States have a strong sense of familial and social capital. In our study, we saw our two participants leverage their CCW by engaging with their peers through organizations such as campus ministry and Greek life. By participating in these activities James and Michael found a sense of community among their peers. Additionally, we observed that the students found motivation through their parents' sacrifices which activated their familial capital. When students need support they seek additional aid through their friends, ministries, and family which emphasizes the social capital these students possess.

It is important to note that the participants involved in this study were both male. We have not looked at the experiences of Black women in engineering, though this type of study can enhance already existing research. The capitals men and women utilize should be observed for researchers to gain a better understanding of the different ways these demographics succeed in engineering.

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