

The school stakeholder community as a source of capital for the talent development of black students in a high school engineering career academy

School
stakeholder
community

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Abstract

Purpose – This paper aims to examine the role of school stakeholders (e.g. advisory board members, school administrators, parents, teachers and school board members) at a 99% black academy in promoting the achievement and broadening participation of high school black students in engineering career pathways.

Design/methodology/approach – The authors followed a qualitative case study design to explore the experiences of school stakeholders (e.g. students, district and school personnel and community partners) associated with the implementation of the career academy (Stake, 2006; Yin, 1994).

Findings – The authors found that the school relied heavily on the support of the community in the form of an advisory board – including university faculty and industry leaders – to actively develop culturally responsive strategies (e.g. American College Test preparation, work-based learning opportunities) to ensure the success of black students interested in pursuing career pathways in engineering. Thus, school stakeholders in the academy of engineering served as authentic leaders who inspired academy students by serving as role models and setting examples through what they do as engineering professionals. It was quite evident that the joy and fulfillment that these authentic leaders gained from using their talents directly or indirectly inspired students in the academy to seek out and cultivate the talents they are good at and passionate about as well (Debebe, 2017). Moreover, the career academy provided environmental or sociocultural conditions that promoted the development of learners' gifts and talents (Plucker and Barab, 2005). Within that context, the goals of career academy school stakeholders were to support students in the discovery of what they are good at doing and to structure their educational experiences to cultivate their gifts into talents.



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Research limitations/implications – It is also important to acknowledge that this study is not generalizable to the one million career academy students across the nation. Yet, the authors believe researchers should continue to examine the career academy advisory board as a source of capital for engaging and preparing diverse learners for success post-high school. Further research is needed to investigate how advisory boards support students' in school and postsecondary outcomes, particularly for diverse students.

Practical implications – The authors highlight promising practices for schools to implement in establishing a diverse talent pipeline.

Social implications – On a theoretical level, the authors found important insights into the possibility of black students benefiting from a culturally responsive advisory board that provided social and cultural capital (e.g. aspirational, navigational and social) resources for their success.

Originality/value – While prior researchers have studied the positive impact of teachers in career academies as a contributor to social capital for students (Lanford and Maruco, 2019) and what diverse students bring to the classroom as a form of capital Debebe(Yosso, 2005), research has not identified the role of the advisory board (in its efforts to connect the broader community) as a vehicle for equipping ethnically and racially diverse students who come from economically disadvantaged backgrounds with social capital. Within that sense, the authors believe the advisory board at Stanton Academy relied on what the authors term local community capital to provide resources and supports for black students' successful transition from high school into science, technology, engineering, and mathematics (STEM)-related college and career pathways.

Keywords Black students, Career academies, High school, Cultural capital, Social capital, STEM education, Talent development, College and career readiness, Black males, Career academy, Cultural responsive pedagogy

Paper type Research paper

Introduction

Research has demonstrated the critical role that community engagement plays in reforming urban schools for initiating more sustainable change (Green, 2017). Community engagement in schools refers to relationships between schools and businesses, individuals, formal and informal organizations and postsecondary institutions (Sanders, 2005). In general, research has shown positive outcomes when schools and communities develop close ties in terms of more effective school functioning, additional fiscal and human resources, higher student academic achievement and well-being, greater parental participation and better community health and development (Boutte and Johnson, 2014; Epstein, 2001; Sanders, 2005). Further, engagement from the community is mutually beneficial with schools often receiving donations (e.g. small grants, equipment) and supports in a variety of ways, such as guest speaking, mentorship and internships (Badgett, 2016; Engeln, 2003; Turnbull, 2015). To be clear, the facilitation of partnerships between schools and their communities require a great deal of coordination and effort on both parties involved, but the rewards for the school, students and community can be quite worthwhile (Hands, 2010). In this context, principals have tended to lead school–community relationship efforts (Khalifa, 2012; Voorhis and Sheldon, 2004). However, to sustain school–community partnerships, the engagement of an entire team of stakeholders is often more successful than relying on one individual from a school (Sanders, 2005).

One form of community engagement is school–business partnerships. The emergence of school and business partnerships is predicated partly by chronic budget constraints and the shrinking fiscal environment of US schools, particularly those in low-income, ethnically and racially diverse, urban environments (Molnar, 2005). In addition, the level of school and business partnerships across schools are uneven in that urban schools usually suffer from a lack of resources because they are typically situated within poor communities, thereby further exacerbating inequities (Warren, 2005). Critics contend that these school–business partnerships often result in corporate exploitation and a mismatch of interests. That is,

while schools focus on the needs of educating students for democratic and civic functions, corporations sometimes treat “students as consumers to be manipulated” (Molnar, 2005, p. viii) and to be obedient and uncritically minded (Hewitt, 2005). Challenging the negative views of school–business partnerships is an issue community stakeholders have to resolve in their quest to establish mutually beneficial relations.

One of the most enduring high school reform initiatives that emphasizes school–business partnerships is the career academy model. In the USA, it is estimated that there are over 8,000 high school career academies – including area regional career centers, charter, magnet and traditional comprehensive high schools (school-within-a-school model) – in existence, serving over one million students nationwide (Lanford and Maruco, 2019; National Career Academy Coalition, 2019). To date, researchers have examined the value of the career academy model mainly from a human capital perspective (Lanford and Maruco, 2019). Within that context, students are thought of as investments, by way of skills, for the mutual benefit of companies and individual economic and skill development. However, this theoretical lens leaves out how organizations, such as schools, can help develop talent that can be used as capital for students, particularly underserved youth. This case study demonstrates how a high school career academy can serve as an intervention to promote black students’ access to science, technology, engineering, and mathematics (STEM)-related learning opportunities. The stakeholders in the career academy actively worked to provide opportunities for students by promoting a culturally affirmative environment where resources and facilitators (e.g. material resources, opportunity, social support and belonging, high standards and high expectations) are leveraged to support the talent development of black male students in STEM fields. Using Yosso’s community cultural wealth framework, we found that a culturally affirmative environment was provided for black male academy of engineering students through the use of aspirational capital, navigational capital and social capital. More specifically, we found that the stakeholders relied on local community capital as a form of social capital.

To that end, one particular noteworthy aspect of the career academy model that has not been studied is its use of an advisory board (including internal and external community members) to provide resources for student achievement. Hence, the purpose of this study was to examine the role that school stakeholders (e.g. advisory board members, school administrators, parents, students, school board members and teachers) played, at a 99% black academy of engineering (with 95% of them coming from economically disadvantaged backgrounds), in promoting the achievement and broadening participation of black high school students toward STEM-related college and career pathways.

Career academies’ role in talent development

Career academies are programs of study featuring small learning communities found within high schools (Fletcher *et al.*, 2019). They focus on providing students with a college preparatory curriculum integrated within a career theme. Thus, curricula in career academies feature the integration of academic and technical content to increase rigor and relevance to students’ career interests. The academy model also emphasizes partnerships with relevant employers and postsecondary institutions through advisory boards. These advisory boards are designed to support students (e.g. funding, guest speaking, work-based learning opportunities) in the academy (Kemple and Snipes, 2000). Career academies are designed to bring together school stakeholders in supporting the talent development of youth. Thus, these schools stakeholders built structured learning experiences for students by enabling them to “learn to do” – where students have opportunities to cultivate their knowledge and skills within their selected occupational context (Debebe, 2017). Moreover,

the career academy provides environmental or sociocultural conditions that promote the development of learners' gifts and talents (Plucker and Barab, 2005). Within that context, the goals of career academy school stakeholders are to support students in the discovery of what they are good at doing and to structure their educational experiences to cultivate their gifts into talents.

Fletcher *et al.* (2019), using a case study analysis, found that school stakeholders within a high school career academy had a positive influence on school culture, embraced a unique attitude of acceptance for all, and was perceived as a safe place for students. The academy elements that were associated with a positive school culture included the open enrollment policy, small school size and student-shared interests by focusing on a STEM-related career theme.

In addition, Moore (2006) found that having a strong interest in STEM; participating in high school career and technical education programs that emphasize STEM; acquiring high aptitudes in science and mathematics; gaining the support from parents and family members; and fostering meaningful experiences and relationships with school personnel were all inspirational aspects motivating black males to major in STEM areas in college. For black students, Fletcher and Cox (2012) found that black students believed participation in career academies was the most meaningful aspect of their schooling experiences and provided them an opportunity to gain a sense of community/belonging, acquire hands-on training and explore their own individual interests. Thus, it is quite plausible that career academies have the potential to provide a positive learning experience for black students.

Social capital

Social capital includes the resources and knowledge that exists through relationships (Bourdieu, 1985; Bryan *et al.*, 2011; Coleman, 1988). Bryan *et al.* (2011, p. 89) stated that these relationships can be:

Viewed on the microlevel in terms of personal relationships (e.g. relationships with family members, teachers, and counselors) or the macrolevel in terms of social networks or institutions (e.g. churches, schools, community organizations).

Social capital through career academies

Lanford and Maruco (2019) examined how career academy teachers might equip students with social capital needed to enhance their achievement, particularly as it relates to contributing factors in ensuring their viability and effectiveness. They noted:

If students have the ability to acquire social capital and transcend class stratification, it can be argued that teachers, particularly in small learning communities like career academies, can play an integral role in securing resources for their students. (p. 625)

Lanford and Maruco (2019) found that the benefits of the career academy resonated with the personalized supports students gained that built their confidence, enhanced their academic skills, sharpened their career interests and increased their interpersonal relationships with teachers through the cohort model. They believed the aforementioned factors (e.g. increased confidence, enhanced academic skills, sharpened career interests and increased interpersonal relationships) contributed to positive student outcomes in the research literature for academy students as it relates to attendance, exam scores, academic achievement, graduation rates and college matriculation. They further noted that social capital was used in the career academy to form industry connections; enhance trust between

academy directors, teachers and students; and was a source that provided heightened motivation for learners. The academy directors served as *boundary spanners* between the culture within companies and education. It was critical that the academy director addressed local workforce needs as well as provided internship opportunities for students. Lanford and Maruco (2019) also noted that the increased interpersonal skills found in the academy was a source of *bounded solidarity* that contributed to social capital for students, teachers and academy directors. This, then fostered trust, raised expectations and provided a sense of investment.

Community cultural wealth

In an effort to retheorize, reframe and empower the experiences of people of color, Yosso (2005) presented an alternative theoretical approach titled community cultural wealth. As an extension of critical race theory (Bell, 1992), community cultural wealth is a framework designed to expose the pervasiveness of racism within US social structures particularly educational spaces (both in classroom teaching and scholarly literature) and more importantly highlight how the skills, language and experiences students of color bring with them to the classroom should be valued and cultivated as strengths rather than perceived and treated as deficits. Community cultural wealth also expands on the concepts of social and cultural capital (Bourdieu, 1986). Yosso (2005) argued communities of color leverage their own forms of capital to survive and thrive in a society that is designed to marginalize and oppress them in numerous apparent and subtle ways. Given the focus on black students and their families' lived experiences, the community cultural wealth framework will provide an appropriate and useful lens to examine the ways in which these students leveraged their various forms of capital to overcome and resist the barriers and disadvantages they encountered as a result of their race, ethnicity, socioeconomic status, family educational background and limited resources associated with their secondary schooling experiences in a US society that privileges whiteness (Bell, 1992; Yosso, 2005). Yosso (2005) outlined six types of capital associated with community cultural wealth: aspirational, navigational, social, linguistic, familial and resistant. Yosso (2005, p. 77) defined aspirational capital as "the ability to hold onto hope in the face of structured inequality and often without the means to make such dreams a reality." Navigational capital refers to "skills of maneuvering through social institutions" (p. 80). Similar to Bourdieu's (1986) definition of social capital, Yosso (2005, p. 79) described social capital as "networks of people and community resources" accessible to an individual. Moreover, linguistic capital refers to "the intellectual and social skills attained through communication experiences in more than one language and/or style" (Yosso, 2005, p. 78). Familial capital involves "cultural knowledge nurtured among familia (kin) that carry a sense of community history, memory, and cultural intuition" (Yosso, 2005, p. 79). Lastly, resistant capital refers to the "knowledge and skills fostered through oppositional behavior that challenges inequality" (Yosso, 2005, p. 80).

Still, research has not focused on how academy stakeholders (e.g. school administrators, district administrators, school counselors, advisory board members, parents, teachers) could provide a source of capital for students, particularly ethnically and racially diverse learners who come from economically disadvantaged backgrounds.

Method

Research design

The researchers followed a qualitative case study design to examine the role that school stakeholders (e.g. students, district and school personnel and community partners) played in promoting the achievement and broadening participation of black high school students in

STEM-related college and career pathways (Stake, 2006; Yin, 1994). Our research approach was interpretivist in nature (Stake, 2006; Yin, 1994), and the goal was to document strategies for supporting black male engineering students. In our interview protocol, we examined the external supports (e.g. business/industry, community, postsecondary education, school-based, student) the stakeholders provided to promote student success. The researchers used pseudonyms throughout our discussions to replace participant and school names as well as locations.

The researchers studied an NAF (formerly known as the National Academy Foundation) academy of engineering (the case) operating within unique contexts (e.g. community and school district) at a distinguished level according to the NAF standards of practice. NAF continuously evaluates their high school academies to assess their level of implementation based on standards of practice. They rate academies on five levels of implementation, using the following hierarchy from highest to lowest: distinguished, model, certified, member and under review. NAF's educational design is based on these elements: academy development and structure, curriculum and instruction, advisory board and work-based learning. The case study method was the most appropriate for studying school culture, organizational structures and supports and practices of a distinguished NAF whole school (all students participate in one of several career academy themes) magnet academy of engineering for the following reasons. First, case studies focus on understanding the case and how it operates in context of its particular situation. Second, case studies emphasize the functioning, activities and practices that take place within the case. Third, case studies examine working parts and structures of a case as a system. In our case study, we relied on indirect (interviewing participants) data-gathering methods, which were conducted virtually using Zoom because of the COVID-19 pandemic (Stake, 2006; Yin, 1994).

Selection criteria

The researchers purposely selected Stanton Academy (pseudonym) because it was a distinguished NAF academy of engineering and its demographics – 99% African American and 95% economically disadvantaged student population. The researchers believed Stanton Academy would help uncover how high fidelity (e.g. close adherence to standards in its implementation) NAF academy school stakeholders promote the success of black male engineering students. Hence, the richness of the academy context and implementation of student supports helped us to answer our research question.

The case: Stanton Academy

Demographics. Stanton Academy is located in the city of Stanton (population of approximately 124,000) which is 55% white, 37% African American/black, 4% Latinx and 3% Asian. The median income was approximately \$42,000, and 19% of the community members lived below the poverty line. The city of Stanton was home to a historically black college and university.

The Stanton Engineering Academy was a public school with a distinguished (whole school magnet) NAF academy (one of several career themed programs) embedded within the school. It was located in an urban area within the southeastern region of the USA. Stanton Academy included approximately 969 students and 71 teachers (who were majority black). In terms of gender, 51% of students were female and 49% were male. Concerning ethnic and racial background, 99% of students were black and 1% were Latinx. Ninety-one per cent of students qualified for free and/or reduced lunch. The graduation rate was 97% with a student college-bound rate of 90%. Stanton Academy relied on an application system for

student admission to the academy of engineering and several other career themed academies within the school.

The advisory board included 17 community members and subcommittees made up of a variety of STEM-related firms that served as a primary source of employment within the local area. These local industries included environmental engineering, manufacturing industrial plants, petroleum oil refineries, chemical facilities, architectural firms, engineering consulting firms, the chamber of commerce and STEM university faculty.

Researchers' positionalities

It is helpful to acknowledge the researchers' own inherent biases, perspectives and frames of reference as researchers, which most likely influenced and shaped research encounters, processes and findings. All authors are faculty (four black men and one black woman). The researchers have professional backgrounds in the field of career and technical/workforce education, special education (with an emphasis in gifted education), counselor education and educational psychology. All five of the researchers have studied issues related to the impact of student participation in high school STEM-themed career academies as well as inequities in access to academically rigorous programs in schools, particularly for ethnically and racially diverse as well as students who come from economically disadvantaged backgrounds.

Data collection

The researchers conducted 11 virtual focus group interviews with 3 district administrators, 2 school administrators, 1 school board member, 1 school staff member (registrar), 8 teachers (core academic and engineering teachers), 2 school counselors, 8 advisory board members (including postsecondary partners and business and industry representatives) and 6 black male academy of engineering students ($n = 31$). We selected the school stakeholders with assistance from the academy director. We interviewed the aforementioned school stakeholders because of their substantial contributions to the academy. Each of these school stakeholders held important roles in contributing to the academy. The district and school administrators and school board members provided a strategic vision for the academy. The school staff member and school counselors facilitated student enrollment in the academy. The advisory board provided supports in the forms of assessing the success of the academy and implementing corrective actions to improve the success of the academy. And, the teachers and students ensured the successful day-to-day implementation of the academy. Together, all of the school stakeholders we interviewed contributed to promoting and broadening participation of black high school students toward STEM-related college and career pathways. Within our interview protocol, we included questions that related to the role that community cultural wealth and social capital played in how the school stakeholders believed that the skills, language and experiences black academy of engineering students brought with them to the classroom was valued and cultivated as strengths as well as the networks they formed to support the academy students.

The interviewees were grouped by their roles. For example, the research team interviewed the following groups together: a school board member, a school staff member, school administrators, district administrators, two groups of teachers, two groups of students, school counselors and two groups of advisory board members. The interviews were related to the mission and vision of the academy, curriculum and instruction and external (community members) and internal (district and school) support targeted toward black male students in the academy of engineering (see [Appendix](#) for an example interview protocol). However, the items of the interview protocol differed based on each stakeholder

group. The interviews occurred on the following dates: January 25, 2021, January 26, 2021 and January 28, 2021. Each interview lasted for 60 min in duration. The university's Institutional Review Board approved all components of this study.

Participant selection

The researchers used the maximum variation sampling procedure to identify key stakeholders who supported the academy and students within it (Collins *et al.*, 2007). More specifically, the researchers relied on the knowledge of an insider informant – the principal – to provide us with a list of participants to interview during the three-day virtual interview. The stakeholders (participants) served in a variety of capacities within the school and we selected them based on their contributions according to our insider informant.

Data analyses

All interviews were audio-recorded by the research team and transcribed verbatim (using a transcription service). The researchers used constant comparison analysis to capture contextual factors underlying program implementation (Leech and Onwuegbuzie, 2010). The researchers first read the entire data set of transcripts. After doing so, the researchers divided the data set into smaller meaningful segments. The researchers then labeled each segment with a code. Afterward, the researchers compared each component and collapsed those with similar codes. Last, we developed themes for each code group. For example, in arriving at a theme, the entire research team first read every transcript individually. The researchers then individually re-read each transcript to search for patterns/codes related to the mission and vision, curriculum and instruction and internal and external support of the school. The researchers met as a research team to discuss the codes that emerged. The researchers then went back to the transcripts to select quotes that match the codes – those that accurately depicted the implementation and supports provided at the academy. The researchers finally were able to discuss and agree on possible phrases/statements that represent the codes, which became our themes. We used in vivo coding; therefore, the research team used the participants' phrases for the codes (see Table 1). Thus, the codes emerged from the data. Further, the research team developed a code book with categories and subcategories to inform the three themes that emerged. The researchers relied on analytical triangulation by engaging in the collective reading and analyses of transcripts.

Data interpretations

During our interviews with the school stakeholders of Stanton Academy, it was evident that they were highly invested in the success of black students in the academy of engineering. We found that the advisory board, in particular, played an instrumental role in providing supports (in the form of social capital) to their students. Three themes emerged from our data analysis: *a lot of investment leading to student engagement with local companies; identifying and addressing challenges; and producing real good engineers*. We discuss our findings below.

A lot of investment leading to student engagement with local companies

The first theme of “a lot of investment leading to student engagement with local companies” signifies the substantial efforts and supports provided by the advisory board members in providing students with internships and other work-based learning opportunities that helped students with networking and learning how to conduct themselves in a professional environment. The school stakeholders at Stanton Academy emphasized the critical role that

Example codes	Themes
• Business connections • They want to network • Engagement of African American male students in particular • A lot of involvement in the community from Engineers and other personnel from universities • Internships and engagement with local companies • Grooming students to be ready for professional jobs • Commitment level to the program • Focusing on African American males	<i>A lot of investment leading to student engagement with local companies</i>
• ACT has definitely been a challenge • Growing their skillset • A big block in terms of getting to college • It's definitely needed • The greatest struggle the council has had • Building up the math	<i>Identifying and addressing challenges</i>
• Produced some real good engineers • They're going into industry and professional careers • Produced some of the best and brightest	<i>Producing real good engineers</i>

Table 1.
Example codes and
themes

their advisory board plays in preparing black students in the academy of engineering for their futures. The advisory board provided a wealth of work-based learning activities to expose students to different types of STEM careers, particularly engineering. More specifically, the advisory board facilitated mock interviews, job shadowing and internship opportunities for students. Even further, they provided professional development for the STEM teachers to ensure they experienced the modern STEM workforce environment and demands to prepare their students for STEM careers. Related to the value of the advisory board, the academy Director, Ms Jones, stated:

They just made it happen for us. They were there for everything. Everything we needed, they were supporting. Ultimately, the internships, they supported that. Everybody on the board had to provide internships for those students, and they were asked to take at least two. They provided the job shadow day where they might have taken 10 students at each industry so that the kids had a chance to go out and see what every industry did. They even started doing a teacher shadow thing where the teachers were brought into industry to find out, what is it you do here? We're teaching these kids, but we need to know what it is you do over here so that we are better prepared to help the kids.

The connections that students made with black business and industry leaders as well as university faculty members in STEM areas enabled them to network and inspired them to persist in their high school STEM coursetaking. Thus, school stakeholders in the academy

of engineering served as authentic leaders who inspired academy students by serving as role models and setting examples through what they do as engineering professionals. The joy and fulfillment that these authentic leaders gained from using their talents directly or indirectly inspired students in the academy to seek out and cultivate the talents they are good at and passionate about as well (Debebe, 2017). Yosso (2005) argued communities of color leverage their own forms of capital to survive and thrive in a society that is designed to marginalize and oppress them in numerous apparent and subtle ways. Given the focus on black students and their families' lived experiences, the community cultural wealth framework provided an appropriate and useful lens to examine the ways in which these students leveraged their various forms of capital to overcome and resist the barriers and disadvantages they encountered as a result of their race, ethnicity, socioeconomic status, family educational background and limited resources associated with their secondary schooling experiences in a US society that privileges whiteness (Bell, 1992; Yosso, 2005). Within that context, we believe the advisory board at Stanton Academy relied on what we term *local community capital* to provide resources and supports for black students' successful transition from high school into STEM-related college and career pathways. This type of capital is similar to Yosso's (2005) description of social capital as "networks of people and community resources" used to support the success of students of color. It is important to note that this community was reflective of the cultures and ethnic backgrounds of the black students' themselves. Dr Green, Associate Superintendent for career and technical education within the school district, noted the engagement that students in the academy of engineering experienced:

Because they have so many people coming in to just talk, and they are meeting presidents of universities, engineering and owners of businesses and firms, professional athletes who used to be students there. We've recently met with [Black professional football athlete] from the [professional football team], the students, they just get the opportunities to meet people, and that's important to them. They wanna network and take the next step. That's just an example [...].

The stakeholders emphasized the value of students gaining real-world exposure and experience in STEM, in addition to taking part in the coursework. To that end, Ms Cartmill, Co-Chair of the advisory board and business leader for a chemical engineering company, indicated:

The most important piece, it's not just the coursework they get, it's the business connections. It's the, you know, tie-in to support from business. It's the internships. It's getting out as a high school student and getting into a profession and learning that, "Hey, this is what I really want." That's the part that's the most powerful.

The advisory board was a reflection of the broader community investment. Stanton Academy was a highly recognizable, high-profile and influenced school with strong and active alumni connections. In addition to the athletic programs (basketball and football), the engineering program was seen as a pillar of the community. It was also home to a very prominent university that has a strong engineering program. Stanton Academy stakeholders remained connected to the local university.

Identifying and addressing challenges

The second theme of "identifying and addressing challenges" signifies the efforts that the advisory board made in identifying challenges (e.g. the need to help prepare students for the ACT) and the ways they addressed them. The advisory board members had an active role in promoting a positive learning experience for students in the academy of engineering. They were invested in addressing any challenges and barriers that prohibited a successful

transition for students from high school to college. They shared that their vision was to ensure that students were college and career ready and eventually would major in a STEM-related field and pursue it as their career. The advisory board had a multitude of functions, which included connecting with community partners, embracing NAF to ensure the academy had all of the resources and supports needed for to sustain, fundraising, parent engagement, student achievement (e.g. ACT prep), teacher professional development, role modeling and facilitating work-based learning opportunities. The advisory board identified one issue in particular that they focused on addressing. This issue was related to the low ACT scores of black students in the academy of engineering. They discussed how the low scores served as a barrier for entry into college for many of the black academy of engineering graduates. Thus, while students graduated from Stanton Academy with high grade point average (GPAs,) they still were often unsuccessful at majoring in STEM-related areas within college. To that end, Ms Cartmill indicated:

[...] in the area of ACT, it has definitely been a challenge, and in particular for African American males that are within the program [...] we want them, once they leave the [Stanton Academy] engineering program, to go on into a STEM, preferably engineering, but, you know, into some STEM field. If they can't score — and I don't know what the requirements are for [local university] today but — typically coming in because it's a very competitive program, 25. Well, we're not seeing that from the [Stanton Academy] students. Even though [...] GPAs are 3-plus, but the ACT scores are 17, 18, 19. That can't get you into an engineering program. We've had, you know, my seven to eight years on the council, various ACT programs to try to help the students, and it's truly been a struggle [...] we are now taking a small segment — and just because of our budgeting constraints — but ten students and starting with the ninth grade and trying to help them to give them the skillset early on because we are being told by the time they're, you know, 11th, 12th grade, if they have not had the fundamentals then they're not gonna be successful. That's one of things that we are working [...] and others, on ACT prep to help them. Like I said, if you're gonna ask what's the greatest struggle that the council has had, I would say that's probably been our greatest struggle is with ACT prep.

It was evident that the supports provided by the advisory board were instrumental in the success of students at Stanton Academy. We believe that the advisory board engagement was a source of capital for black students interested in pursuing STEM-related college and career pathways. While we believe that all of the school stakeholders played important roles in the implementation of the academy, it is important to note that we elaborate on the contributions of the advisory board as we found them to be instrumental in assessing the state of affairs within the academy (as it relates to student success factors) and taking actionable steps to improve any academic challenges that students in the academy were facing.

Producing real good engineers

The third theme of “producing real good engineers” signifies the end goal of the school stakeholders in working with the academy of engineering students. The goal of the advisory board was to continue the high performance of the academy of engineering and provide supports for black students to ensure that they had the knowledge, skills and dispositions needed to excel in a STEM-related career. Thus, the advisory board provided the leverage to meet those goals by promoting the talent development of black students in the academy of engineering to enable them to achieve. This entailed providing students with structured learning experiences to develop the knowledge, skills and aptitudes needed within an engineering occupational context. Within that context, an advisory board member shared with us that:

[Stanton Academy] has historically produced some real good engineers, some real good students. It used to be a totally selective academic magnet academy, and again, that produced some of the best and the brightest, and what we're doing as the council is tryin' to continue that history or that historical performance by providin' some of our industry knowledge and/or resources to help — to maintain it — to make sure that it continues to perform as it has.

The focus of the academy of engineering was specifically targeted to black students given that 99% of students at Stanton Academy were within that demographic group. The advisory board members and school district administrators were especially excited to share with us that black males, in particular, were successful in the academy of engineering. One of the school board members, Mr Harris stated:

Our African-American males [...] are very successful. They're graduating. They're going to professional careers. They're going into both industry and professional careers. I just think just all around, the wrap-around support, number one, because it's so prominent in the community, I think that's the foundation. The way that after the students graduate, it's very instilled in them to come back and do for their school and their pride in their school.

Therefore, the advisory board at Stanton Academy relied on alumni who were invested in the school to come back and make a difference in the next generation of black STEM talent. In sum, we found the community cultural wealth framework provided an interpretive lens to analyze the types of capital that the school stakeholders (particularly the advisory board) provided black students in the academy of engineering. The types of capital that align with our data interpretations of the school stakeholders included aspirational capital, navigational capital and social capital. Yosso (2005, p. 77) defined aspirational capital as “the ability to hold onto hope in the face of structured inequality and often without the means to make such dreams a reality.” The experiences (e.g. internships connecting students to black engineering professionals) that the advisory board facilitated with the academy of engineering students were sources of aspiration for students and convinced black students in the academy of engineering that they did indeed have the personal characteristics and aligned identities to be pursue engineering as a possible career. Also, navigational capital refers to “skills of maneuvering through social institutions” (p. 80). The advisory board played an important role in ensuring that black students in the academy of engineering had the knowledge, skills and dispositions to be successful in professional engineering environments as well as were able to meet the requirements to matriculate into college/university settings by preparing them for the American College Test (ACT)/scholastic aptitude test (SAT) test. Similar to Bourdieu's (1986) definition of social capital, Yosso (2005, p. 79) described social capital as “networks of people and community resources” accessible to an individual. Within that context, we believe the advisory board at Stanton Academy relied on what we term *local community capital* to provide resources and supports for black students' successful transition from high school into STEM-related college and career pathways.

Discussion

In our study, we used a qualitative case study approach of 31 school stakeholders at a 99% black and 95% economically disadvantaged career academy to examine the role that school stakeholders (e.g. advisory board members, school administrators, parents, teachers and school board members) played, at an academy of engineering, in promoting the achievement and broadening participation of black high school students toward STEM-related college and career pathways. Our goal was to describe how these school stakeholders and community members collaborated with a shared mission to support the success of their students. Stated

differently, we wondered how social capital functions within the context of a career academy in an effort to highlight effective school practices for the talent development of black students.

We found that the advisory board played a critical role in connecting Stanton Academy, the local business community and postsecondary institutions (Sanders, 2005). Similar to prior research, we found positive outcomes for black students interested in pursuing STEM-related areas because of the close ties between the school and community (Boutte and Johnson, 2014; Epstein, 2001; Sanders, 2005). In addition, school stakeholders in the academy of engineering served as authentic leaders who inspired academy students by serving as role models and setting examples through what they do as engineering professionals. The joy and fulfillment that these authentic leaders gained from using their talents directly or indirectly inspired students in the academy to seek out and cultivate the talents they are good at and passionate about as well (Debebe, 2017). Moreover, the career academy provided environmental or sociocultural conditions that promoted the development of learners' gifts and talents (Plucker and Barab, 2005). Within that context, the goals of career academy school stakeholders were to support students in the discovery of what they are good at doing and to structure their educational experiences to cultivate their gifts into talents.

On a theoretical level, we found important insights into the possibility of black students benefiting from a culturally responsive advisory board that provided social and cultural capital resources for their success. While prior researchers have studied the positive impact of academy directors and teachers in career academies as a contributor to social capital for students (Lanford and Maruco, 2019) and what diverse students bring to the classroom as a form of capital (Yosso, 2005), research has not identified the role of the advisory board (in its efforts to connect the broader community) as a vehicle for equipping ethnically and racially diverse students who come from economically disadvantaged backgrounds with social capital. Yosso (2005) argued communities of color leverage their own forms of capital to survive and thrive in a society that is designed to marginalize and oppress them in numerous apparent and subtle ways. Given the focus on black students and their families' lived experiences, the community cultural wealth framework provided an appropriate and useful lens to examine the ways in which these students leveraged their various forms of capital to overcome and resist the barriers and disadvantages they encountered as a result of their race, ethnicity, socioeconomic status, family educational background and limited resources associated with their secondary schooling experiences in a US society that privileges whiteness (Bell, 1992; Yosso, 2005). More specifically, we found three forms of capital (aspirational, navigational and social) that the advisory board cultivated to promote the success of black students in the academy of engineering.

Similar to Bourdieu's (1986) definition of social capital, Yosso (2005, p. 79) described social capital as "networks of people and community resources" accessible to an individual. Within that context, we believe the advisory board at Stanton Academy relied on what we term *local community capital* to provide resources and supports for black students' successful transition from high school into STEM-related college and career pathways. It is important to note that this community was reflective of the cultures and ethnic backgrounds of the black students' themselves. This type of capital is similar to Yosso's (2005) description of social capital as "networks of people and community resources" used to support the success of students of color.

Further, Lanford and Maruco's (2019) finding that academy directors and teachers brought social capital in the form of industry connections and internships for students was applicable to the role that the advisory board played in our study. In this case, the advisory board (in particular) functioned as a network of community members who garnered local resources and opportunities (e.g. STEM professional representatives, corporate partnerships, internships and other work-based learning activities and postsecondary faculty engagement) to promote the achievement and broaden participation of black high school students toward

STEM-related college and career pathways. It is also important to highlight that the advisory board members of Stanton Academy reflected the cultural backgrounds of the students in the school and many were alumni. This helped the advisory board members develop culturally appropriate supports to improve the performance of their students.

We also found that students benefited from aspirational capital as “the ability to hold onto hope in the face of structured inequality and often without the means to make such dreams a reality” (Yosso, 2005, p. 77). The experiences (e.g. internships connecting students to black engineering professionals) that the advisory board facilitated with the academy of engineering students were sources of aspiration for students and convinced black students in the academy of engineering that they did indeed have the personal characteristics and aligned identities to be pursue engineering as a possible career.

In addition, we found that the advisory board provided students with navigational capital, which refers to “skills of maneuvering through social institutions” (Yosso, 2005, p. 80). The advisory board played an important role in ensuring that black students in the academy of engineering had the knowledge, skills and dispositions to be successful in professional engineering environments as well as were able to meet the requirements to matriculate into college/university settings by preparing them for the ACT/SAT test.

Based on our findings, we have several recommendations for school personnel. First, we advocate for school personnel to develop advisory boards to provide students with work-based learning activities and connections to business and community leaders within their local regions. Second, we believe it is critical that the school stakeholders and advisory board members reflect the cultural backgrounds and life experiences of the students they serve. Third, we recommend that the advisory board members represent the major local workforce industries within their regions as well as postsecondary partners. Fourth, it is critical for school personnel who are establishing career academies to ensure that students are actively able to actively pursue their own interests and the freedom to allow them to choose their talents (Debebe, 2017). The need for students to have choice in pursuing their interests is critically important in the process of talent development.

It is also important to acknowledge that this study is not generalizable to the one million career academy students across the nation. Yet, we believe researchers should continue to examine the career academy advisory board as a source of capital for engaging and preparing diverse learners for success post-high school. Further research is needed to investigate how advisory boards support students’ in school and postsecondary outcomes, particularly for diverse students.

Conclusion

Stanton Academy is an example of how a career academy can promote black male students’ access to high-wage, high demand and high-skilled college and career pathways related to STEM. The academy has the potential of positively countering deficit modes of thinking related to black male students and can provide a culturally affirmative environment in which the advisory board and other school stakeholders garners resources (e.g. work-based learning opportunities, engagement from STEM professionals and postsecondary partners) that are supportive and provide opportunities and access for black males in terms of talent development in STEM fields. This type of capital is similar to Yosso’s (2005) description of aspirational capital, navigational capital and social capital used to support the success of students of color.

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Appendix

School
stakeholder
community

Advisory Board Member Interviews Academy External Supports

Date: _____ Location: _____

Interviewee: _____ Role/Title: _____

Time: _____ Interview Team (Initials): _____

Debriefing and Assurances

- For new interviewees: Summarize the purpose of the research and visit
- Summarize purpose of the interview
- Provide assurances of anonymity and voluntary participation
- Secure permission to record the interview

1. **Personal Background:** Describe your role in the academy and on the Advisory Board.
2. **Key External Supports and Factors for Implementation:** What are the key external supports (e.g., supports from the broader community) and organizational factors (e.g., school-based supports) mediating the successful implementation of the academy?
 - a. In general, what are the key external supports contributing to the success of the academy?
 - b. What type of supports do you provide to the academy?
 - c. How often do you engage in advisory board meetings with the academy?
 - d. Can you share one or two of the most impactful actions taken for the improvement of the academy suggested by the Advisory Board?
 - e. How does the advisory board promote equitable practices?
3. **Business/Industry Supports:** What is the extent and quality of external support from the business and industry sector?
 - a. Describe the support from the Engineering/IT sectors in the community? (Which companies?)
 - b. Describe specific supports provided by Engineering/IT industry partners.
 - c. Describe the work-based learning opportunities available for students in the Engineering/IT academy.
 - d. In general, what would you say are the key factors for the successful implementation of work-based learning opportunities for students?
 - e. What do you think are the challenges for implementing work-based learning opportunities (e.g., internships) for students?
4. **Student Supports:** What is the extent and nature of supports for students?
 - a. What is the extent of parental/family involvement supporting students in the academy?
 - b. How does the advisory board promote and support the interests and successes of African American/Black students?
 - a. Are there any unique supports for African American/Black male students?
 - d. What activities and programs are there in the academy that are targeted to engaging African American/Black male students?
5. **Postsecondary Education Institutional Support:** What is the extent and nature of external supports from postsecondary education institutional partners of the academy?
 - a. What is the extent of collaboration with postsecondary education institutional partners?
 - b. What are the specific supports postsecondary education partners provide to the academy teachers and/or students?
 - c. What is the mechanism used to ensure that participation in dual enrollment or other advanced learning opportunities represent successful collaborative experiences for all parties involved?
6. **Evaluative Perspectives on External Supports:** From your perspective, what is your overall assessment of the quality of the external organizational supports for the academy?
 - a. What other issues, challenges, or successes would you like to share about the academy?
 - b. Are there any areas of external organizational support for the academy that need improvement?
7. **Closing Statement/Question.** Thank you for your insights. Is there anything else you would like to add on the characterization of the external supports and factors shaping the implementation of the academy?