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Increasing Diversity in the Sciences through Critical Service-Learning

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Abstract

The purpose of this article is to explicate the benefits of engaging youth of colour in a way that engenders a rights-based understanding of disparities. We also show how critical service-learning experiences can encourage students of colour to pursue careers in applied and social sciences. The aims of this paper are met by briefly exploring the inequities presently facing communities of colour; discussing the utility of engaging youth of colour through critical service-learning opportunities; and the potential of experiential learning in motivating youth of colour to pursue careers in STEM, health, and human service professions with a critical, rights-based lens.

Keywords: inequity, diversity, critical service-learning, critical pedagogy, youth of colour

Introduction

People of colour in the United States have collectively endured a history that is fraught with dehumanization, domestic terrorism, and social injustice since the time of European colonization. Yet, the experiences of marginalized people have largely been minimized or altogether discounted in educational (Allen, 2012; James, 2012; Leonardo, 2013), economic/professional (Toldson & Snitman, 2010) and political spaces (Levinson, 2007) due to the ubiquity of a Eurocentric paradigm steeped in White privilege and hegemony. The pervasiveness of this paradigm has made it difficult to mitigate inequities in areas such as healthcare and educational attainment (Pettit & Nienhaus, 2010; Thorpe et al., 2013). The inequities that exist simultaneously in multiple areas such as education and employment collectively contribute to diminished access to educational and economic resources for youth of colour (Chambers, 2009; Condron et al., 2013; Green, 2015), consequently affecting their well-being. This is concerning from a workforce development standpoint because it means that fewer youth of colour will enter careers in science, technology, engineering, and math (STEM), as well as health, and human service professions (e.g., social work, medicine, or public health) (Daily & Eugene, 2013; Hur et al., 2017).

Poor achievement in the sciences among youth of colour, particularly those from what is described by the US federal government as underrepresented minority (URM) groups has been well documented (Ball & Skrzypek, 2020; Duong et al., 2021; Ellis et al., 2018). The racial achievement gap persists despite efforts to reduce it (Sprague Martinez et al.,

2016; Tung et al., 2015). The steady deterioration of science achievement among URM students is due, in part, to a decrease in science instructional time during the school day. This phenomenon is also perpetuated by an education system that employs teachers and administrators that are mostly White (Boser, 2014), underprepared to educate students of colour (Emdin, 2011), and heavily influenced by a deficit thinking framework (i.e., the idea that students of colour are inherently intellectually inferior or deficient) (Alemán Jr. et al., 2017; Gillborn, 2015). Communities of colour across the United States also contend with the far-reaching effects of racial oppression characterized by economic disenfranchisement, violence, and exploitation that maintain inequities (McCoy & Rodricks, 2015). Failure to effectively address the root causes associated with the achievement gap and the lack of URM students advancing into STEM, health, and human service professions may contribute to the persistence of these very inequities. By increasing the number of professionals in areas such as healthcare, engineering, and behavioral health from underrepresented populations, the likelihood of engaging marginalized communities in more effective ways stands to be increased (Hur et al., 2017). To be clear, increasing diversity in professions that implicitly (and explicitly) reinforce institutional biases through research and praxis is not enough to dismantle hegemonic thinking around issues of race and ethnicity. The intention of this article is to call attention to one potential pathway to increasing the number of URM youth that pursue careers in STEM, health, or human service professions by challenging racist, otherizing paradigms that devalue and minimize the experiences of marginalized people.

Pathways for underserved, youth of colour must be created to increase diversity in the STEM, health, and human service professions. At the same time, there is a need for programming that both acknowledges and challenges institutional bias. While training URM youth to find their place in these professions, there is an opportunity to imbue them with a rights-based lens and create a space for their own racial identity development, which can be accomplished through critical service-learning. Mitchell (2015) defined critical service-learning as "an approach to civic learning that is attentive to social change, works to redistribute power, and strives to develop authentic relationships" (p. 20). Critical service-learning experiences are more than volunteer opportunities in that they help students to think critically about the world around them. Students who engage in critical service-learning are also encouraged to take on active roles in addressing matters of social injustice, including leadership roles (Mitchell, 2008). As a result, they can develop a nuanced understanding of how social problems evolve and critically assess what steps can be taken to work toward the betterment of those in need utilizing a rights-based perspective rooted firmly in social justice (Mitchell, 2008).

In accordance with the human rights-based approach (HRBA) put forth by the United Nations Sustainable Development Group (UNSDG) Human Rights Working Group (2003), a rights-based perspective espouses and enacts six principles pertaining to human rights, which are comprised of: the universality and inalienability of human rights; the indivisibility of human rights; interdependence and inter-relatedness of human rights; the equality of all individuals; the right to participation and inclusion of each individual; and accountability and rule of law. Helping marginalized youth to develop a rights-based perspective would empower them to question, challenge, and work to change what they are seeing and experiencing as they critically examine their environment. Critical service-

learning could also provide youth with an opportunity to gain practical experience in a field of their choice, illuminating the possibilities that their untapped potential could afford them. Educational programs that support the ideal of a critical, rights-based approach to learning and practice that incorporates the experiences of youth of colour do exist and have shown various levels of success (Alemán et al., 2017; Sprague Martinez et al., 2016). However, programs such as these are typically the exception and not the rule (Alemán et al., 2017; Delgado Bernal, 2002).

Freire (1970) wrote about the oppressive nature of education systems and how they stifle students' creativity and critical thinking by preparing them to do nothing more than contribute to the maintenance of social systems that consistently rejects them in a number of ways. Educational and service-learning programs that ignore the systematic oppression of people of colour can be unwittingly oppressive despite benevolent intentions. This omission stems from assumptions rooted in Eurocentrism and White privilege that promote meritocracy and colour blindness (Delgado Bernal, 2002; Leonardo, 2013; Milner, 2012; Solorzano & Delgado Bernal, 2001). When service-learning is implemented solely as a volunteer opportunity, it minimizes the social, political, and economic underpinnings of the problem being addressed. Brown (2001) discussed the shortcomings of hegemonic conceptualizations of service-learning when she noted that within that perspective "[c]ommunity 'needs' are understood as 'deficiencies', and communities 'served' are understood as 'disadvantaged', or 'under-privileged'" (p. 15).

Thus, the purpose of this article is to explicate the benefits of engaging youth of colour in a way that teaches them to critically examine the communities in which they live and to challenge oppressive conditions to promote equity. More specifically, we seek to demonstrate the benefits of critical service-learning as a method to expose youth of colour to professions in STEM, health, and human services. The aims of this paper will be met by briefly exploring the inequities presently facing communities of colour; discussing the utility of engaging youth of colour through critical service-learning to address these issues; and the potential of experiential learning in motivating youth of colour to pursue careers in STEM, health, and human service professions with a rights-based, critical lens.

Inequities and Barriers

As previously mentioned, one cannot clearly understand critical service-learning as a means of empowering youth of colour without understanding the current barriers that they face. While a more comprehensive discussion of these barriers is beyond the scope of this paper, the following section will explore how systemic inequities impact communities of colour. Some of these barriers also impede youth from obtaining the education necessary to enter into STEM, health, and human service professions, resulting in a lack of representation that has profound implications for equity and community outcomes (e.g., Hall et al., 2015; Ledesma & Calderón, 2015). For this reason, more generalized barriers must be understood and accounted for.

Poverty and diminished economic mobility negatively impact the ability to acquire vital resources, which disproportionately impacts people of colour (Thorpe et al., 2013). In fact, poverty (Sandy & Duncan, 2010), limited educational attainment (Condron et al., 2012), unemployment, and criminal/delinquent activity (Osgood et al., 2010) are just some

of the risk factors that exist for communities of colour. These risk factors are often manifold and compounded by resource deprivation, making it virtually impossible to discern the primary cause of negative outcomes because they so often co-occur in the lives of those impacted. Pettit and Nienhaus (2010) illustrated this point when they investigated mediators of health disparities and concluded that, "as long as disparities in income, education, and other socioeconomic variables persist, adverse consequences including disease, hardship, and ultimately death will continue to surface" (p. 52).

Inequities in educational attainment, employment, and economic mobility work together to negatively impact outcomes in people of colour (Hull et al., 2008; Sudano & Baker, 2006; Vanderbilt et al., 2013). Tucker and Dixon (2009) noted that African American youth living in poverty typically have educational experiences that are qualitatively different than their White peers when it comes to mental health diagnoses, assessment of learning needs, risk of poor academic performance, and punishment for disruptive behaviors in school. Poverty has also been linked to truant behaviors in youth, increasing the likelihood of poor school performance, school dropout, juvenile delinquency, and other high-risk behaviors (Newsome et al., 2008). Even when services are made available to address these issues, they are rarely provided in ways that are accessible, culturally competent, evidence-based, and account for students' background and individual risk factors (Koffman et al., 2009). Consequently, youth of colour negatively affected by these risk factors often experience a difficult transition to adulthood, which impacts their ability to find and maintain gainful employment (Curtis, 2012).

Toldson and Snitman (2010) found that education played a major role in diminishing racial economic disparities between Blacks and Whites in that having less education was associated with greater economic disparity, indicating that educational attainment is integral to improving the quality of life for marginalized groups. Yet, there is a pronounced achievement gap in the United States (Chambers, 2009; Emdin, 2011; Howard & Reynolds, 2008) that has left Blacks and Latinos underrepresented in STEM and health science careers. For example, between 1993 and 2002, Blacks only represented 2.6% of the earned doctorates in biological sciences and Latinos only 3.6% (Chang et al., 2008). Additionally, in 2002, 3,114 White students received doctorates in biological sciences in comparison to only 122 Blacks and 178 Latinos (Chang et al., 2008). The relatively low enrollment of Black and Latino students has also been consistent in medical programs over time. For instance, in 2011, Black and Latino students represented only 4.6% and 5.5% of those enrolled in MD and PhD programs, respectively (Jeffe et al., 2014). In a more recent observation, the American Association of Medical Colleges (2022) reported that just 8% (i.e., 7,711 out of 95,475) of newly enrolled medical school students identified as Black or African American in the 2021-2022 academic year. Latinos only made up just over 6% (i.e., 6,465 out of 95,475) of that same student population (American Association of Medical Colleges, 2022). The number of enrolled students is likely to decrease considering that retention rates for medical schools rarely hold constant through residency. Somehow, youth of colour need to be engaged more consistently in ways that unlock their potential to diversify professions where their presence is needed while empowering them to be more involved in addressing social issues. Unfortunately, educational attainment for people of colour is often impeded due to inequities present in other areas (e.g., economic,

employment, and healthcare) (Gillborn, 2013; Leonardo, 2012; Osgood et al., 2010; Sandy & Duncan, 2010).

The negative outcomes experienced by many within marginalized, underserved communities of colour often propagates mistrust between community members and the very social institutions intended to meet their needs (Feisthamel & Schwartz, 2006; Hammond, 2010). This is largely because community members often have little voice in the design or delivery of said services. This issue is compounded by a lack of diversity among professionals in the various fields that serve these communities (e.g., medical and educational) (Kim et al., 2008), which has contributed to the maltreatment of clients of colour (Escobar, 2012; Feisthamel & Schwartz, 2006) as well as a longstanding aversion to help-seeking by people of colour (Redmond et al., 2009). Rojas-Guyler et al. (2008) demonstrated this when they observed health seeking behaviors in Latinas and found a number of barriers that inhibited their ability to receive healthcare. These barriers included cost, lack of insurance, poor communication, in addition to cultural insensitivity from healthcare providers.

Hall and colleagues (2015) conducted a meta-analysis examining racial bias among healthcare professionals. Of the 15 studies they identified, all but one showed low to moderate levels of discriminatory practices against people of colour by healthcare professionals. These institutional biases contribute to disparities in how people of colour access and receive care, culminating in higher rates of mortality (Chandran & Schulman, 2022; Hall et al., 2015). Kim et al. (2008) explored this phenomenon when they reviewed the literature to investigate disparities in cancer treatment between Black and White men. They observed that there were differences in disease management at all stages of the illness between the two groups, which partially explained why survival rates improved for White men over time, but not for Black men.

To counteract these negative outcomes, there is a need for practitioners in STEM, health, and human service professions to develop a critical lens, in order to understand how various systems of oppression interact and determine life chances. For instance, Rondini (2015) discussed the flawed (yet pervasive) notion that amplifies the biological significance of race in a way that perpetuates disparities by conflating the impact that race and environmental factors (e.g., socioeconomic status) have on health outcomes. Practitioners from underrepresented, marginalized groups could be particularly instrumental in raising awareness and consciousness among their hegemonic, majoritarian colleagues as well as within disenfranchised communities by sharing information from a rights-based perspective. However, increased diversity in STEM, health, and human service professions would only help to address issues rooted in institutional bias if the training is intentional. Critical service-learning is a means of empowering youth, leveraging their lived experience and personal assets to combat cycles of oppression and reduce inequity.

Critical Service-Learning

Critical service-learning has been described in the literature as a form of service-learning that explicitly aims to address social justice concerns (Mitchell, 2007). This is done by facilitating the development of a perspective within participants that evaluates

social and economic systems with a critical lens that takes into account institutional bias and privilege. As a result, participants are empowered to be more mindful of their place within society and work toward ameliorating social injustice in any number of ways (e.g., informed voting, volunteering, or careers in helping professions) (Batchelder & Root, 1994; Glanville, 1999; Seider et al., 2011). The potential outcomes associated with critical service-learning make this approach a potential pathway for underrepresented groups to become more involved in the discourse related to inequities in areas like health and education.

The purpose of critical service-learning is to encourage the pursuit of social justice from a rights-based perspective by acknowledging that the amelioration of social injustices calls for us to challenge issues of systemic oppression and inequity (Mitchell, 2015). Such an approach is helpful in contributing to the discourse around inequity in that participants are equipped to rethink how social systems and institutions function and contribute to the maintenance of disparities. This then helps them to make informed decisions on effective ways to work toward lasting change as opposed to providing services that maintain the status quo. Participants are also empowered to engage community stakeholders in ways that can lead to meaningful change at the individual, organizational, and community levels of society.

> A social justice and social awareness approach places attention on inequitable systems, moves beyond the unidirectional relationship assumed by the charity model, and embraces a dynamic network of problem-posers and problem-solvers. The focus is on learning and participation in process, of which all members are part. (Kinloch et al., 2015, p. 42)

Given the human rights and social justice implications of inequities and all the moving parts associated with them, critical service-learning has the potential to be a very effective method of addressing these complex issues from within affected communities (Sprague Martinez et al., 2016).

Unfortunately, programs that use critical service-learning models do not typically focus on high school aged youth from underserved communities (Sprague Martinez et al., 2017). Nevertheless, examples of this approach can be found in the literature and the results demonstrate the potential of these programs to make an impact on participants and their communities (Giles & Eyler, 1994; Keen & Hall, 2009; Lakin & Mahoney, 2006; Lay, 2007). For example, Wang and Rodgers (2006) observed the impact of service-learning courses that emphasized social justice on college students compared to peers who took similar courses without a social justice emphasis. They found that participants who took the service-learning classes with a social justice emphasis displayed significant gains in cognitive development. Mitchell (2007) interviewed participants after completing a critical service-learning program and found that:

> [t]he concepts of power and privilege raised through dialogue in the classroom in tandem with the action of meaningful service in the local community and reflection on both offers the praxis that can lead to the perspective and action desired from students in developing commitments to social justice. (p. 109)

These outcomes have implications for how participants that go on to become practitioners in applied and social sciences think about health disparities. To date, very

little research exists that applies critical service-learning approaches to addressing inequities. This is surprising given that ameliorating inequity in the areas of education, healthcare access, health outcomes, and economic mobility is most certainly a social justice issue. Addressing such persistent inequities requires a holistic approach that accounts for risk factors and historical contexts.

Creating Rights-Based Practitioners

It is arguable that a context of cultural hegemony that marginalizes youth of colour and fails to recognize their cultural assets is at least partially responsible for the outcomes associated with gaps in educational achievement (Artz & Murphy, 2000; Entman & Paletz, 1980; Lears, 1985; Semmes, 1995). This narrative creates a deeply entrenched social norm that puts young people of colour at significant disadvantage when trying to pursue educational opportunities, realize their potential, and make meaningful contributions. Educational settings in which students are treated as empty vessels dependent on teachers to fill them with information are more prevalent in schools in which youth of colour are the majority (Freire, 1970; Solorzano & Delgado Bernal, 2001). In such settings, diverse forms of knowing are not valued, and students are expected to absorb information as opposed to engaging in creative ways that afford them the opportunity to question, critique, inquire, or make connections to what they are learning. Instead, they are disempowered, deprived of opportunities to be creative or think critically about what they are learning and its implications (Freire, 1970). Disempowering youth or denying them autonomy inhibits them from developing internalized motivation, which is critical for prolonged engagement and subsequent achievement (e.g., knowledge development) (Black & Deci, 2000; Ryan & Deci, 2000). Conversely, Stoneman (2002) argued that society as a whole benefits when youth are included in decision-making processes that determine how social institutions are run. One of the main benefits being that involved youth develop an increased sense of social responsibility that remains with them upon entering adulthood.

Matthews (2014) proposed a potential solution to the problem of disempowering pedagogical methods when she discussed a need for health education to incorporate a critical pedagogy that allows for multiple perspectives (i.e., those of students and teachers alike) to be shared and considered. Most importantly, by taking a more inclusive approach to learning, students are given the opportunity to consider multiple contexts associated with social issues. Students are also afforded the opportunity to process conflicts as they arise. Matthews (2014) concluded that addressing inequities must take into account how helping professionals are trained. Therefore, if increasing diversity in STEM, health, and human service professions is desired, steps must be taken to engage youth early in their academic careers to tap into their curiosity and potential.

Alemán and colleagues (2017) created such a program when they co-founded the Adelante Partnership in 2005 with the intention of improving educational opportunities for students of colour at a Title 1 elementary school. The program has since grown to serve youth in elementary, secondary, and post-secondary schools. The Adelante program has established partnerships with numerous K-12 and post-secondary institutions, sustaining relationships with youth across the educational pipeline, parents, teachers, and school administrators (Alemán et al., 2017). All programming implemented at Adelante is rooted in a social justice framework. Alemán et al. (2017) asserted that, “to address the type of

issues that [their] community and school must contend with daily, a social justice focus must be central and must drive all that [they] develop, implement, and sustain" (p. 856). Moreover, two of the four components that they recommended to facilitate teachers' transition to a social justice framework entailed approaching learning as dialogical inquiry and developing culturally relevant curricula (Alemán et al., 2017).

Other researchers have sought to expose youth to the sciences through critical pedagogy with the intent of instilling a more holistic understanding of health trends. For instance, Sprague Martinez and colleagues (2017) developed an afterschool program that targeted diverse youth of colour in middle school that utilized a critical service-learning intervention rooted in empowerment that allowed youth to critically observe social determinants of health. The approach utilized critical pedagogy by requiring participants to employ a critical perspective. The principal idea guiding the intervention was that youth are experts in their own lives and possess a unique understanding of community dynamics. It was hypothesized that participants' civic engagement would increase after engaging in an exploration of social determinants of health in their community using critical pedagogy within the context of critical service-learning (Sprague Martinez et al., 2017). Youth who participated in this program were invested in the processes that unfolded as the program was implemented. These youth demonstrated their understanding of social issues by developing health messages that they presented to community stakeholders during a capstone presentation at the conclusion of the program (Sprague Martinez et al., 2017).

Sprague Martinez and colleagues (2016) observed a similar critical service-learning program that was geared toward youth of colour. The aims of this particular program were to improve students' interest, motivation, and attitudes toward science and to increase active and engaged citizenship among program participants (Sprague Martinez et al., 2016). The outcomes associated with program participation were mixed. Students who participated in the program did not show an overall significant shift in their interest, motivation, and attitudes toward science. However, participants reported a significant increase in their sense of civic efficacy, neighborhood connection, and overall active and engaged citizenship (Sprague Martinez et al., 2016). The absence of increased interest in the sciences was attributed to the dual foci of the program (i.e., increasing interest in the sciences and increasing civic engagement) being pursued with a limited understanding of the more technical aspects of the varied professional perspectives among youth and facilitators (Sprague Martinez et al., 2016). Future versions of this program could address this limitation by increasing the involvement and mentorship of healthcare professionals and social scientists.

It is imperative that youth workers, teachers, educational administrators, and policy makers acknowledge that youth of colour bring community-based assets and indigenous knowledge to their educational experiences in valuable ways (Delgado Bernal, 2002). Programs such as those in the aforementioned examples have the capacity to cultivate and foster transformational resistance within marginalized students that helps them to thrive in oppressive environments. Solorzono and Delgado Bernal (2001) describe a student who exhibits transformational resistance as someone who "holds some level of awareness and critique of his or her oppressive conditions and structures of domination and [is] at least somewhat motivated by a sense of social justice" (p. 391). Therefore, transformational

resistance also motivates marginalized people to work toward institutional change that facilitates diversity and equity in some way.

The work done by Sprague Martinez and colleagues (2016) indicates that underserved youth are willing to be involved in the discourse around inequities as well as to participate in activities related to STEM, health, and human service professions, indicating that critical service-learning is a viable means of capturing their interest. Their finding that youth express an increased interest in community involvement is aligned with the existing research on service-learning and youth (Camino & Zeldin, 2002; Conrad & Hedin, 1982; Markus et al., 1993). What Sprague Martinez et al. (2016) and Sprague Martinez et al. (2017) add to the current discourse around youth engagement and critical service-learning is the potential of this energy to be channeled into diversifying STEM, health, and human service professions and increasing community involvement in addressing inequities.

Implications for Practice

We propose a particular approach to aid efforts to empower youth in ways that increases their understanding of inequities and encourages them to pursue careers in the STEM, health, and human service professions. This approach takes into consideration what the existing literature reveals about the nature of inequities and the utility of critical service-learning and critical pedagogy. Building upon the work of Sprague Martinez et al. (2016), what makes this approach unique is that it is intentionally designed to increase the number of practitioners of colour in STEM, health, and human service professions with a rights-based, critical lens. The idea is that students of colour who pursue careers in fields like engineering, medicine, or social work will think critically about the lived experiences of the populations that they serve and engage in work that mitigates systemic barriers that maintain disparities through advocacy, consciousness-raising, and collaboration.

Education and Awareness

The approach begins with youth from underrepresented communities being given space to critically examine inequities, the historical context in which they emerged, and the factors that sustain them within a rights-based perspective. These things are not typically taught in K-12 education. As a result, young people often internalize the oppressive environmental conditions in which they operate. This leaves them vulnerable and powerless, furthering the cycle of oppression. This dynamic can be shifted by providing youth with a historical context and enacting their voice. It also allows young people to become engaged, process their lived experience in a broader context, and come to terms with their own experiences of oppression. Additionally, it challenges them to be more critical of the information that they receive and work collectively to create change that advances social justice and protects human rights.

Inquiry-based education such as critical-service learning allows students to fully engage in the learning process and to actively pursue new knowledge (Brewer & Daane, 2002). More importantly, it acknowledges that youth bring a wealth of experiences with them to the learning process, expertise, and hypotheses related to how the world works, allowing them to marshal the evidence needed to develop answers and support their reasoning (Gibson & Chase, 2002). Given that underserved youth often attend schools that

are limited in their capacity to supplement prescribed curricula, a more feasible method could manifest through out-of-school time (OST) programs. OST programs provide an ideal setting in which to increase youth interest and motivation for learning. Research indicates that OST programs are associated with improved scientific learning and academic career interests (Dabney et al., 2012) by offering academic benefits and enhancing social and emotional learning (SEL) and individual well-being (Miller et al., 2011; Moore et al., 2014; Woodland, 2008).

Mentorship

Mentorship can facilitate learning in youth by providing a means for them to develop the skills to apply what they have learned in effective ways. Guided research experiences can help students to develop their metacognitive skills and the ability to direct their thinking and learning (Kanter & Konstantopolous, 2010; White & Frederiksen, 1998; Wolf & Fraser, 2008). Additionally, mentorship experiences could be instrumental in underserved youth of colour realizing their potential and challenging themselves to move beyond what is expected of them (Phillipi et al., 2022). Unfortunately, these learning opportunities are rarely available to youth of colour who attend public schools in low-income areas. Such settings are less likely to link scientific learning to the broader context in which youth learn (Basu & Barton, 2007). Critical service-learning programs could provide a means of addressing the need for mentors in underserved communities through partnerships with universities, hospitals, and other research institutions.

Skill Development

Having students apply what they have learned toward some project or assignment is likely the most critical step in the proposed approach. What makes this step so important is that youth ask questions and create some product utilizing a newly developed, rights-based perspective. When they conclude their learning experience, they will have tangible evidence of the knowledge and skills that they had acquired by demonstrating that the present inequities that plague marginalized communities infringe upon the rights of the individuals living within them. This evidence would prove that they are capable of pursuing and enacting positive change through inquiry and implementation. The process of applying what was learned could also expose youth to the possibilities of entering fields that work to ameliorate disparities. The skills that they develop and the rights-based perspective they acquire are likely to remain with them even if these experiences do not motivate participating youth to pursue careers in the STEM, health, or human service professions. As a result, the way that they understand and engage social systems stand to be positively impacted.

Research

Lastly, research would be necessary to build an evidence base for this approach. Careful evaluation is imperative in promoting best practices as it relates to engaging underserved youth in this way. It will also be important to observe the outcomes associated with this approach in terms of how social systems and institutions are impacted. For example, racist and discriminatory experiences among healthcare professionals have been documented (Escobar, 2012; Hall et al., 2015; Rasmussen & Garran, 2016). It would be

enlightening to determine if those experiences diminish as the number of URM healthcare professionals grows over time. Though there is a great deal of research on institutional bias against clients and practitioners of colour, there is surprisingly little research that explores the potential of increased diversity in the applied and social sciences on reducing institutional bias for the people of colour who are providing or receiving services. The approach proposed in this paper was developed with the intention of increasing the number of URM practitioners with a rights-based understanding of their respective fields. Therefore, conducting research that investigates the impact of the growing presence of URM practitioners in STEM, health, and human services on any outcomes associated with the work that they engage in would be warranted.

Conclusion

Institutional bias and societal inequities are symptomatic of larger systemic issues in need of resolution. Outcomes such as educational attainment contribute greatly to people's quality of life, which is manifested in their health outcomes, employability, and economic mobility. Considering that these inequities are so deeply intertwined at various levels of society, solving these multifaceted problems will likely be similarly complex. This is indicative of a necessity to move beyond cultural competence training and utilize an approach that is diverse, interdisciplinary, and rights-based (Vanderbilt et al., 2013).

Efforts to address the aforementioned inequities would benefit from looking within affected communities (e.g., underserved communities of colour) to raise awareness and ensure that community members' perspectives are included in amelioration efforts (Luque et al., 2011).

There is not much research that explores the utility of critical service-learning programs as a means of engaging marginalized youth in a way that is inclusive, rights-based while encouraging them to pursue careers in fields that would allow them to address issues of inequity. We wanted to illustrate the need for more practitioners with the insight of someone who lives with oppression and understands the necessity of practicing in a way that is critical and rights based. Engaging youth, particularly youth of colour, in ways that deepen their understanding of social issues and includes them in rights-based problem solving has been shown to increase their critical thinking and sense of social responsibility (Evans, 2007; Hope & Jagers, 2014), prompting them to critically examine the social context within which they operate, and challenge established norms. These same youth could develop an interest in professions that aim to reduce disparities (Reed et al., 2005).

Consistent participation in extracurricular actives has been shown to predict academic achievement and prosocial behaviors in adulthood (Zaff et al., 2003). Critical service-learning is a type of extracurricular activity that focuses on issues of social justice and privilege while encouraging students to see themselves as social change-agents (Mitchell, 2008). There is considerable potential for youth of colour to become more involved in addressing issues of health, educational, and economic disparities within their respective communities; particularly when they are engaged through interventions that employ critical service-learning (Sprague Martinez et al., 2016; Sprague Martinez et al., 2017).

Lastly, addressing disparities effectively will require an interdisciplinary approach. Vanderbilt et al. (2013) stated that interprofessional education and interdisciplinary

collaboration is sorely needed to address the disparities racial and ethnic minorities face. Critical service-learning can be very useful in conveying this sentiment to youth in that it calls for participants to assess systemic conditions that potentially lead to negative outcomes. By understanding the systemic issues that contribute to inequities, youth of colour could see the different professional roles that they could play in combating these issues. As a result, STEM, health, and human service professions can become more diverse through an infusion of people of colour with a rights-based perspective.

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