Cultivating Diversity and Inclusion in Higher Education:

The Role of Graduate School Preparation Programs

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> Preparation and retention programs aimed at underrepresented students are often criticized for their limited ability to influence large-scale change.

Graduate school preparation programs (GSPPs) are formal programs designed to increase student-of-color participation in providing preparatory course work, summer immersion and research experiences, mentors, and intensive program advising (Lewis, 2007; Simpson, 2003). Evidence shows that GSPPs increase interest and participation in graduate school for Black and Latino students, particularly in the science, technology, engineering, and mathematics (STEM) fields. Despite this promising news, there has been very little inquiry examining how GSPPs connect and support broader institutional diversity and inclusion goals and initiatives. As a result national funding organizations continue to invest in these programs in order to improve the greater pipeline for underrepresented students of color.

Regardless of this information, GSPPs are not permanent and fixed components of their institutions, and as result, these programs are often vulnerable and at risk of being scaled back or eliminated. (Jones, 2000; Walker et al., 2010). Furthermore, preparation and retention programs aimed at underrepresented students are often criticized for their limited ability to influence large-scale change because they cater to a small, specific population and frequently are costly to operate (Barnett, et.al., 2012). Currently, the literature on GSPPs is limited in its ability to highlight the value of these programs beyond supporting a small select group of students of color. More evidence is needed on how these programs not only serve their participants, but also contribute to the larger campus community and institutional goals.

This study sought to explore how GSPPs support the goals and contribute to the goals and needs of the institutions in which they are situated. At a macro level, examining the role of GSPPs within their institutions is important toward helping institutional leaders and external funding organizations think about how these programs can be better funded and connected to other initiatives and programs that seek to bolster the participation of students of color. At an institutional level, this inquiry can help institutional leaders re-imagine GSPPs and how they could be integrated into broader strategic planning for increasing diversity and inclusion.

REVIEW OF LITERATURE

A program is defined as a set of resources and activities directed toward one or more common goals (Newcomer, Hatry, & Wholey, 1994). While there are many types of graduate school preparation programs, within this study, graduate school preparation programs were graduate-level initiatives designed to increase access to graduate education and retention graduate education for underrepresented students of color, particularly Black and Latino students (Lewis, 2007; Simpson, 2003). Graduate school preparation programs (hereafter referred to as GSPPs) are formal programs designed to increase student-of-color participation by providing preparatory course work, summer immersion and research experiences, mentors, and intensive program advising (Lewis, 2007; Simpson, 2003).

History and Location of GSPPs

While the number of GSPPs has not been documented, what is known is that they continue to proliferate, and they do have a positive effect on access and retention for underrepresented students of color (Lewis, 2007; Stassun, Burger, and Lange, 2010) across institutional type and discipline. Consequently, there has been an increase in the amount of funding, inquiries, and studies being conducted on GSPPs (BEST 2004; Lewis, 2007; Walker et al., 2010). Still, to date, there has been no real systematic data collection chronicling the origins and history of GSPPs. What can be concluded from the available literature is that GSPPs began to gain popularity in the early 1990s and have the highest concentration in the hard sciences (Simpson, 2003; Walker, et. al., 2010). GSPPs come in many forms, but they can be readily identified by their formal structured aims to accomplish one or more of the following goals: (a) to increase interest in graduate education and careers that require graduate education; (b) to recruit and provide greater access to graduate schools; and (c) to decrease student attrition, increase retention, successfully moving students from matriculation into careers that require a graduate degree (Lewis, 2007; Simpson, 2003; Walker et al. 2010). The literature reveals that programs categorized as a GSPP may be intended for a number of student populations, including (a) students from underrepresented racial or ethnic, socio-economic, or geographically located groups; (b) at-risk students (i.e., students labeled as more likely to fail or drop out); (c) women; and (d) the general student population (BEST, 2004; Walker et al., 2010). While GSPPs can cater to any of these populations, those that have a strong focus on the recruitment and retention of underrepresented students of color and students at risk—which is often used as a proxy term for underrepresented students of color—were of most interest to this study. Most GSPPs aimed at increasing the retention of Black and Latino students incorporate strategies that seek to improve academic deficiencies, prepare students for graduate study by early introductions to college life and courses, and provide intensive mentoring and advising (Simpson, 2003; Walker et al, 2010). The location of a GSPP within an institution can depend on the discipline, its explicit and implicit goals, the formal role and location of its leader, and its primary funding source (Walker et al, 2010). GSPPs may be housed within a specific academic department, or they can be situated within academic affairs, academic support, or the multicultural affairs division of an institution. GSPPs that are focused on a specific discipline are usually housed within that department. Wherever they may be situated, these programs offer lessons and strategies that can benefit the institution as a whole. This is especially true of GSPPs that offer the broadest range of services and support to its students.

Types of GSPPs

GSPPs come in many forms that vary in terms of length of time, support, and overall structure. The most common types of GSPPs fall into seven categories: (a) academic bridge programs, or transition programs designed to improve student efficacy and skills in specific subject matter; (b) research opportunity; (c) student support programs, including tutoring programs, mentoring and advising, and financial support; (d) social networking; (e) leadership training; (f) living-learning communities, which are designed to create a holistic cohort experience for students; and (g) hybrid programs, which may incorporate several or all of the aspects described above (BEST, 2004; Myers,2003; Pender et al., 2010; Tierney, Corwin, Auerbach, & Venegas, 2003; Walker et al, 2010). While all of these seek to address various points of pipeline challenges, the hybrid GSPP is the most comprehensive in terms of goals and support, and, based on the current literature, it is the most noted for addressing the various needs of graduate Black and Latino students (Jones, 2000; Simpson, 2003; Walker et al. 2010). It is for this reason that hybrid GSPPs were of particular interest to this study.

Hybrid GSPPs

Hybrid GSPPs are the most comprehensive and intensive type of GSPP because they incorporate the widest range of intervention strategies to assist in recruiting, retaining, and securing access for Black and Latino students. Hybrid GSPPs are most commonly found in the STEM fields, particularly engineering, the traditional sciences, nursing, and medicine (Walker et al., 2010). While these hybrid GSPPs vary in structure and disciplinary focus, they share the same general mission: to prepare students to pursue and complete graduate studies. The basic components of hybrid GSPPs include advising, mentoring, research experiences, financial assistance, and workshops that are designed to increase transparency about the discipline, demystify the graduate education process, and provide information about development and advancement within STEM study and subsequent careers (Lewis, 2007; Stassun, Burger, and Lange, 2010).

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One of the earliest and most recognizable examples of a hybrid GSPP is the Fisk-Vanderbilt Bridge program. The Fisk-Vanderbilt Masters-to-PhD Bridge program is a partnership between Vanderbilt University, a PhD-granting Research I university, and Fisk University, a research-active HBCU. The Vanderbilt-Fisk GSPP seeks to broaden the participation of underrepresented racial and ethnic groups in the science, technology, engineering, and mathematics (STEM) fields, specifically physics and astronomy, materials science, imaging science, and the biomedical sciences. Since its inception in 2004, the program has attracted a total of 32 underrepresented students, and in 2009, it graduated its first cohort (Stassun, et. al, 2011).

Like other hybrid GSPPs, the Vanderbilt-Fisk program offers a multi-level approach towards student recruitment and retention, which includes a summer transition program where students encounter introductory courses, mentoring, advising, a research experience, an internship, and peer advising. This GSPP has a philosophy that increasing Black- and Latino-student participation in the STEM fields requires identifying and supporting a ”second pool” of students that consists of individuals who are “talented and capable, and can succeed given proper guidance, but who either have not been properly developed or properly evaluated” (Stassun, et. al., 2011).

Consequently, this program not only seeks to identify talented Black and Latino students but students who would be labeled as at risk by other STEM programs. Their strategy for accomplishing this has been to abandon the strict criteria of filtering applicants on the basis of entrance tests such as the GRE in favor of identifying applicants with unrealized potential that can be honed and nurtured (Stassun, Burger, and Lange, 2010). This program is but one example of the ways in which hybrid GSPPs can tailor their recruitment and overall program to facilitate the goal of increasing Black- and Latino-student participation. But while hybrid GSPPs like this are diverse in their offerings and approaches to support Black and Latino students, the way in which these programs are studied is very one-dimensional and limiting.

GSPPs in the Literature

Studies have shown that GSPPs contribute to increased interest among students of color in graduate school and have an impact on student selection of graduate programs, applying to graduate school, gaining admission into graduate school, and conducting research at the graduate level (Foertsch et al., 2000; Lewis, 2007; Frierson et al., 1994; Stamps & Tribble, 1995). Consequently, governmental agencies, professional STEM groups, and higher education have increased their interest and support for these programs (Langen & Dekkers, 2005). Many of these efforts are focused specifically on recruiting underrepresented populations, such as Blacks, Latinos, Native Americans, women, and students from disadvantaged socioeconomic backgrounds (Langen & Dekkers, 2005; Wistedt, 1998). Unfortunately, most of these studies are single-site case studies. For example, Simpson (2003) explored the academic and social transition experiences of graduate students of color, analyzing their experience by race, type of GSPP experience, and duration. Her data revealed that GSPPs were especially critical to students of color who had low self-efficacy and needed skill building in their major's core courses. Hybrid GSPPs that contain mentoring, advising, research experiences, and social and professional development opportunities were also shown to increase student confidence and awareness about the graduate school experience.

However, Simpson's study, like most research conducted on GSPPs, demonstrates the value of GSPPs in addressing the student-of-color pipeline by exclusively focusing on outcomes, the student population being served, and the evaluation and need for GSPPs. While this data is promising, studies like these only underscore how helpful these programs are for a small select group of participants. There has been very little systematic effort to explore how these programs serve the needs of the institutions or the greater campus community in which they are situated. This may reinforce the view that these programs are "add-ons" and not integral parts of their institutions, even though they play a valuable role in recruiting and retaining students of color.

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Little research has been conducted comparing and contrasting multiple sites or examining how these programs connect to the greater institutional contexts in which they are situated. Worse still, GSPPs are usually seen as isolated interventions, disconnected from their institutions (Stage, 1992) and as a result they are often on the fringe and uninstitutionalized.

Historically, GSPPs have depended on some level of institutional funding to sustain their program's efforts, whether it is departmental, from a senior administrative office, or from the general college budget. However, a recent study by the University of Illinois at Urbana-Champaign (2010) shows that

although institutional funding is critical to the support and continuation of GSPPs, in times of economic hardship and recession, institutions are more likely to cut financial support for these programs. This may be partially because GSPPs, though valuable, are still viewed as limited in their scope because of the small number of students they serve and are competing with other institutional priorities that serve more students. When this occurs, GPLs have to make the difficult decision about whether to decrease expenditures and reduce financial support and services, as well as limit the number of students they can admit. This makes the need for diversifying funding sources critical for them to sustain their programs. Consequently, many GPLs also look to state, federal, non-profit, and corporate support (Walker et al., 2010). However, the external funding for GSPPs, though increasing, remains limited, which makes the process of applying for grant funding very competitive.

RESEARCH QUESTION

In order to investigate if and how GSPPs support other institutional goals and contribute to the greater campus environment, I explored the following research question: How do STEM graduate school preparation programs (GSPPs) designed to increase the recruitment and retention of Black and Latino students in American higher education institutions support, connect, and contribute to other diversity initiatives and institutional diversity and inclusion goals?

Considering my topic of interest and research questions, three significant themes stood out. I wanted to better understand (a) if GSPPs support the goals of other diversity programs and initiatives on campus and the institution as a whole in terms of its goals for increasing diversity and inclusion; (b) what activities and services GSPPs offer to greater campus communities in which they are situated; and (c) how are GSPPs perceived and utilized by the greater campus community (non-participants) in which they are situated. I was seeking to understand if GSPPs in fact only cater to their own small select populations, or whether they have a much larger impact on the institutions in which they operate than they are currently given credit for in the literature of higher education.

CONCEPTUAL FRAMEWORK

To investigate this research question, I chose a conceptual framework that highlights institutional context as it relates to diversity and inclusion. Chang's (2002) theory of institutional change asserts that for an institution to have true inclusion, multiple areas of the institution must be transformed: (a) historical—the legacy of an institution as it relates to diversity and inclusion; (b) structural—the representation of underrepresented students of color; (c) psychological—the campus climate for underrepresented students; and (d) behavioral—the programmatic and curricular practices.

I used this conceptual framework to assess how various activities sponsored by GSPPs work to address these key areas and support the institution's development into an inclusive environment. It should be noted that this conceptual framework limited what I could explore within the context. I chose to focus on diversity and inclusion, but there may be other contextual factors that have a significant impact on the way GSPPs serve their institutions, such as the institution's overall budget, and political factors not related to race and diversity.

METHODOLOGY

Because of the overrepresentation of single-case studies on GSPPs, I chose a multi-case study design to glean insight into trends across institutions. Case study research involves "the study of an issue explored through one or more cases within a bounded system in a setting, context" and involves the

exploration of the bounded system or case "over time through detailed, in-depth data collection involving multiple sources of information" (Creswell, 2007, pg. 74). In the case of GSPPs, I wanted to capture the GSPPs as they were experienced from those who work within and near them in their institutional environment. A multiple-case design allowed me to see not only the shared and unique contributions of the GSPPs but also the distinguishing features of institutional contexts in which these programs are situated.

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Site and Sample Selection

Using what Maxwell (2005) describes as purposeful sampling and criterion selection, I selected GSPPs that met a set of criteria I focused on STEM GSPPs at both highly and moderately selective graduate institutions. In order to control for extreme differences in the structure of GSPPs, I chose to focus on hybrid GSPPs contained within the NSF's Alliances for Graduate Education and the Professoriate program. AGEP is a "network of universities dedicated to increasing the number of underrepresented students of color obtaining graduate degrees in science, technology, engineering and mathematics" at multiple sites throughout the country (American Association for the Advancement of Science, 2013; NSF, 2012). To accomplish this goal, it supports alliances among doctorate-granting institutions. Within the AGEP network, there are a number of hybrid GSPPs, and, because of the national alliance, this program has multiple sites throughout the country. These alliances are expected to develop and implement strategies and infrastructure that will work on all levels of the student-of-color pipeline, including recruitment, retention, and advancement.

AGEP consists of 33 alliances in higher education funded by the NSF. The goals of AGEP include significantly increasing the number of U.S. citizens and permanent residents from underrepresented groups (women, Blacks, Latinos, Native Americans, Pacific Islanders, Persons with Disabilities) enrolling in STEM, as well as SBES (Social, Behavioral and Economic Sciences), doctoral programs, receiving the doctoral degree, and entering the professoriate (NSF, 2013). An AGEP alliance is a group of clustered institutions located within specific zones within each region of the country. More than one zone can exist within a single state; therefore, there may be several clusters within one regional zone. Within each zone, the alliance is composed of one lead institution and two or more alliance institutions. This lead AGEP institution is responsible for coordinating and maintaining the alliance for the clusters in their zone. Each of the AGEP programs participating in this study was the designated lead program for their zone.

DATA COLLECTION

Data were triangulated, starting with documents related to the AGEP GSPPs, including program reviews and reports, marketing materials, internal memos, and published news and periodicals. These documents were used to gather knowledge about each program. Next, I conducted interviews with the leaders of these programs as well as program support staff, faculty partners, and senior institutional administrators. I crafted protocols that included probes designed to uncover the GSPPs' relationships with various offices and departments across their respective institutions, as well as to discover what programmatic activities and services were open and utilized by non-participants. These qualitative interviews were semi-structured and open-ended,

lasting approximately an hour–and-a-half. All interviews were tape-recorded and transcribed to improve confirmability and overall trustworthiness. Finally, using what Erickson (1986) calls interpretative inquiry, I took notes of my observations during campus visits and my reflections after interviews.

Study Participants

After identifying the initial three GSPPs and their leaders, I used a snowball sample to identify additional participants. 20 individuals participated in the study, including: : three senior administrators; three graduate preparation program leaders; eight faculty members; five GSPP staff members; one other GSPP administrator.

DATA ANALYSIS

I examined each GSPP separately to understand the distinctive characteristics of both the GSPP and its respective institutional context. In order to maintain the integrity of the narrative for each participant and site, I took the following steps: (a) re-read the interviews and my post-interview observations; (b) gathered information from the site's website and program materials; and (c) used Dedoose to sort through coded data. Creswell (2007) explains that in regards to case study analysis, a researcher has the option of using holistic analysis, defined by Yin (2009) as the examination of an entire case in which there is a presentation of description, themes, interpretations, or assertions related to the whole case. A researcher could also employ an embedded analysis, in which a researcher selects one analytic aspect of a case for examination (Creswell, 2007). I grouped similar themes within each of these theories to use as codes for my conceptual framework and subsequent data analysis. The codes served as markers for the guiding themes of my conceptual framework. Coding the data in this manner allowed me to examine pieces of each theory and connect similar concepts.

FINDINGS

Based on my analysis, I found several key findings that demonstrate the importance of GSPPs to the intellectual and social development of the faculty and students at their institutions. Furthermore, I found that GSPPs support institutional goals to increase diversity, inclusion, and community collaboration. Related to these findings, I make the following assertions based on my analysis and will review each of these findings briefly:

1. GSPPs seek to increase diversity and inclusion for the greater campus. GSPPs sponsor programming that is inclusive and open to the greater campus community

2. GSPPs have a significant impact on perceptions of diversity and inclusion among faculty and staff within the greater campus community.

GSPPs Seek to Increase Diversity and Inclusion for the Greater Campus

Using Chang's framework, I found that GSPPs address all four areas needed for institutional transformation: (a) historical—GSPPs work to correct the past as well as build a more inclusive future both at the institution and in the field; (b) structural—GSPPs seek to increase the representation of underrepresented students of color; (c) psychological—GSPPs seek to cultivate student retention by improving the campus environment and promoting inclusion; and (d) behavioral—GSPPs seek to influence change by offering programming and practical support that increases feelings of inclusion among students of color.

All of the GSPPs in this study had connections to professional organizations outside the institution to increase awareness and support for STEM students of color who were not necessarily participating in their programs. All of the GSPPs also supported initiatives, programs, and projects that were designed to assist students of color who may or may not be AGEP students on their campus. They did this by engaging in collaborative relationships for grant writing, workshops, and recruitment. As the leader of one of the GSPPs explained:

> But what we want to do is we want to increase the numbers annually that enter…and that the applications have gone up. I mean, we noticed that appreciatively. We've received—we do a lot of recruitment and…we partnered with the faculty, we partnered with the individual outlook programs, because they are trying to get students into their programs. They have limited funds, so we share resources. They say, "We can do this. Can you help us with that?" So they're interested in diversifying their cohorts, and they—we work with them when we can to try to get money for that… (Interview #1)

GSPP Programming is Inclusive and Open to the Greater Campus Community

All three of the GSPPs in this study sponsor activities such as academic conferences, seminars, workshops, and lectures; and they make their activities accessible to the greater campus community. This is demonstrated in the following statement by one GSPP leader:

> Our AGEP is open to all students in all majors with the sense that in order for minority students to be successful and happy, all students have to be successful and happy…in STEM, you are working in your department, and you're typically working within a research group. And if your research group is not being successful and happy, then it will be hard for you to thrive as well because that's where the core of your research and academic work takes place (Interview #25).

GSPPs Have a Significant Impact on Perceptions of Diversity and Inclusion

In all three cases, the GSPP staff and the colleagues they worked with described tangible ways in which the GSPP had improved perceptions and support for diversity and inclusion among faculty and staff within the greater campus community. I discovered a shared perception that the GSPPs had raised awareness about the importance of diversity and inclusion for faculty and administrators not affiliated with AGEP and other diversity initiatives. This increased awareness has apparently led faculty and administration across the university to more support for, and participation in, diversity programs and initiatives. As one GSPP staff member explained:

> And I think some of the successes that we have had is the fact that we have been able to change the disposition of many of the faculty who have moved upward in their administrative bracket. But you have to understand that there's a thousand people here. And the transformative power that will come from the thousand and of the thousand —we have like 100 to 200 faculty who [have] been participating. That's as far as we go with how much transformative value does it have. Of course those are voices that are moving forward, but there are 800 there (Interview #12).

GSPPs must do more than simply raise awareness about the importance of diversity but must also actively advocate for it and try to compel those who are not supportive to see its value. I found evidence that GSPPs do, in fact, work as advocates for change, particularly the leaders of these programs. For at least two of the GSPPs that were examined, it was evident that the program leaders actively confront and change some of the resistant attitudes about diversity among faculty on campus. As one senior administrator explained:

> So I think [the leader of the GSPP] helped us to make a paradigm shift from what tended to be sort of more standard ways of dealing with under-rep programs to underrepresented students. If you were to ask me what was the greatest accomplishment, it's along those terms or lines… (Interview #14)

DISCUSSION AND CONCLUSIONS

As I read through the literature on GSPPs and institutional diversity and inclusion, I discovered that GSPPs designed to recruit and retain underrepresented students of color within STEM were not widely represented, nor were the contributions they make toward campus diversity and inclusion goals. One of the reasons there may be so little attention given to the role of GSPPs to the greater campus community is the limited way in which they are conceptualized and discussed. There is no outlined recognition of their role or of their contributions in either the NSF AGEP grant or within the advertisement materials these programs use to recruit students. Significant work and contribution can be made invisible by devaluation (Moore, Acosta, Perry, Edwards, 2010; Hampson and Junor, 2005).

Diversity and inclusion programs such as GSPPs offer comprehensive academic and social programs that support institutional goals for diversity, inclusion, and academic enrichment. They are also equipped with leaders and staff that have vast knowledge, networks, and collaborative relationships with many communities within and outside their institutions. They are committed to the goals of increasing diversity and creating environments that are inclusive. If higher education wants to truly move beyond symbolic diversity and toward institutional change, institutional leaders and the funding organizations that support diversity initiatives must begin to take the role of these types of programs more seriously.

In the recent guide called "Measuring Diversity: An Evaluation Guide for STEM Graduate School Leaders," the NSF (2011) attempts to help leaders evaluate GSPPs connected to the AGEP. While the importance of understanding context is briefly mentioned, the focus in that guide rests almost exclusively on measuring program impacts and providing tips about strategies for recruiting and retaining students of color. I assert that discussions about the impacts and strategies without consideration for way GSPPs serve and contribute to the greater campus community and institution limits the ability of these programs to be seen more than just auxiliary programs that only serve a small select group of students.

This multi-case study revealed that each GSPP contributed and connected to broader institutional needs to improve diversity and inclusion. The implications are that these programs can have broader applicability to the institutions' strategic plans and long-term goals. Regardless of the institutional context, heightened awareness about the program and its services can bolster their sustainability and visibility. GSPPs are not only creating connections between underrepresented students and the greater campus community, but they are also providing services that contribute to the growth of non-program students, staff, and faculty and thereby supports the diversity, inclusion, and the educational goals of their institutions.

References

American Association for the Advancement of Science. (2013). AGEP Alliances for Graduate Education and the Professoriate. In About AGEP. Retrieved from: http://www.nsfagep.org/.

Barnett, E., Bork, R., Mayer, A., Pretlow, J., Wathington, H., Trimble, M. (2012). Bridging the gap: An impact study of eight developmental summer bridge programs in Texas (NCPR Report. Retrieved from Community College Research Center website: http://ccrc.tc.columbia.edu/media/k2/attachments/bridging-gap-summer-bridge.pdf

Building Engineering and Science Talent. (2004). A bridge for all: Higher education design principles to broaden participation in science, technology, engineering and mathematics. San Diego: BEST.

Chang, M. (2002). Preservation or transformation: where's the real educational discourse on diversity? The Review of Higher Education, 25(2), 125–140.

Creswell, J. (2007). Research design: Quantitative, qualitative, and mixed methods approaches. Thousand Oaks, CA: Sage.

Frierson, H., Hargrove, B., and Lewis, N. (1994). Black summer research students' perceptions related to research mentors' race and gender. Journal of College Student Development, 35(5), 475–480.

Foertsch, J., Alexander, B. B., Penberthy, D. (2000). Summer research opportunity programs (SROPs) for student of color undergraduates: A longitudinal study of program outcomes, 1986–1996. Council on Undergraduate Research Quarterly, 114–119.

Hampson, I & Junor, A, 2005, 'Invisible work, invisible skills: Interactive customer service as articulation work', New Technology Work and Employment, vol. 20, pp. 166 – 181

Jones, S. (2000). Retaining and graduating Black college students: A Longitudinal review of the 1993 James Madison University transition class. Ed.S. Project Master Thesis. Supervised by Dr. Donna Sundre.

Langen, A. van, & Dekkers, H. (2005). Participation in tertiary science, technology, engineering, and mathematics education in the Netherlands and other western countries. Final research report. Nijmegen: ITS, Radboud University.

Lewis, N. (2007). Developing and testing a model to predict underrepresented students' plans for graduate study: Analysis of the 1988–2006 cohorts of a summer research program. Unpublished Dissertation, University of North Carolina at Chapel Hill.

Maxwell, J. A. (2005). Qualitative research design: An interactive approach (2nd ed.). Thousand Oaks, CA: Sage.

Maxwell. May 8, 2007. In peer review, it's time to stop thinking statistically about qualitative research. TC Record. Retrieved from: http://www.tcrecord.org/discussion.asp?i=3&aid=2&rid=12612&dtid=0&vdpid=2761

Moore, H. A, K. Acosta, G. Perry and C. Edwards. (2010). Splitting the academy: The emotions of intersectionality at work. The Sociological Quarterly, 51

National Science Foundation. (2011). Measuring diversity: An evaluation guide for STEM graduate program leaders. Retrieved from: http://www.nsfagep.org/files/2011/04/MeasuringDiversity-EvalGuide.pdf

National Science Foundation. (2012). NSF AGEP request for proposals. Retrieved from: http://www.nsf.gov/pubs/2012/nsf12554/nsf12554.htm

National Science Foundation. (2013). Alliances for graduate education and the professoriate (AGEP): Program description. Retrieved from: http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5474

Newcomer, K. E., Hatry, H. P., & Wholey, J. S. (1994). Meeting the need for practical evaluation approaches: An introduction. Handbook of practical program evaluation, 1-10.

Simpson, M. (2003). Exploring the academic and social transition experiences of ethnic student of color graduate students. Virginia Polytechnic Institute and State University. Unpublished Dissertation. Joan B. Hirt, Chair. Retrieved from http://scholar.lib.vt.edu/theses/available/etd-12082003-155510/

Stage, E. (1992). Interventions defined, implemented, and evaluated. In Matyas, M., Dix, L. (Eds.), Science and engineering programs: On target for women, (pp.15-26). Washington, D.C.; National Academies.

Stamps, S. D., and Tribble, Jr., I. (1995). If you can walk, you can dance: If you can talk, you can sing. Silver Spring, MD: Beckham House.

Stassun, K., Burger, A., and Lange, S. (2010). The Fisk-Vanderbilt Masters-to-PhD Bridge Program: A model for broadening participation of underrepresented groups in physical sciences through effective partnerships with Minority-serving institutions, Journal of Geoscience Education, 58(3), 135–144.

Stassun K., Sturm, S., Holley-Bockelmann, K., Burger, A., Ernst, D., Webb, D. (2011). The Fisk-Vanderbilt Master's-to-Ph.D. Bridge Program: recognizing, enlisting, and cultivating unrealized or unrecognized potential in underrepresented minority students. American Journal of Physics. 2011;79:374–379

Walker, K., George-Jackson, C., Rincon, B., Williams, M.. Baber, L. and Trent, W. (2010). STEM intervention programs: The shift from opportunity to merit. University of Illinois at Urbana-Champaign. The 2010 Annual Conference Association for the Study of Higher Education, November 17–20, 2010, Indianapolis, IN.

Wistedt, I. (1998) Recruiting female students to higher education in mathematics, physics and technology: An evaluation of a Swedish initiative, Stockholm, Swedish National Agency for Higher Education. Retrieved from: https://guoa.ub.gu.se/dspace/bitstream/2077/19296/1/gupea_2077_19296_1.pdf