What Works in STEM Intervention Programs (SIPs) for URM Undergraduates: Perspectives from SIP Administrators

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ABSTRACT

Using data collected as part of a larger study of the various factors that affect undergraduate students' experiences in STEM, this paper addresses the conference topic of STEM student retention best practices. Focusing on intervention programs aimed at increasing the recruitment and retention of minority undergraduates traditionally underrepresented in STEM, this paper explores the perspectives of 56 SIP administrators from 10 large public, research universities around what "works" to enable the successful administration of these programs, especially in terms of how they aid in the recruitment and retention of historically and traditionally underrepresented minority (URM) students in STEM. Garnering the insights and perspectives of those who establish, implement, and direct these SIPs provides some of the research based evidence that the current literature lacks, to place in juxtaposition with the more pervasive anecdotal "evidence" that pervades the literature around educational intervention programs in general, and SIP interventions targeted at URMs in particular. The findings suggest that for the SIP administrators in this study, exhibiting a focus on student-centeredness, community building, and collaboration, and sustaining these efforts, is an integral part of effectively administering intervention programs targeting the recruitment and retention of URM undergraduates in STEM.

Keywords: STEM, Conference Proceedings, Student Retention, Best Practices

INTRODUCTION

The importance of scientific gains to the United States' national and international position in a global economy has recently led to the urgent and adamant call for the production of more postsecondary and advanced degrees in the science, technology, engineering and math (STEM) fields, as well as a strengthening of the STEM pipeline. Concerns have recently been identified not only about the quality and quantity of STEM education in general in the United States, especially in comparison to competitor nations, but also with respect to the low participation of racial minorities in these fields (National Academy of Sciences, 2007). For example, STEM degree recipients have historically been white males and continue to be largely whites and non-minority Asians, despite the fact that minority groups comprise over 30 percent of college-aged adults (18-24), yet continue to represent a severely smaller and disproportionate percentage of students earning post-secondary and advanced degrees in STEM fields (DePass & Chubin, 2008).

In order to meet the challenges the nation faces of remaining competitive with other scientifically and technologically advanced countries, it is apparent that all members of the citizenry must be utilized. Human resources are valuable assets in an information age in which the economy is driven by the ability to process and analyze information rather than manufacturing goods (Leggon & Pearson, 2006). Well-educated and trained-citizens are

necessary for adequately populating the STEM workforce (Friedman, 2005; National Academy of Sciences, 2005) and the United States can no longer afford to fail to develop and nurture the talents of all of its citizens. Not only is addressing representation issues in STEM fields important as a human resource issue—as diversifying these fields has the potential to improve and enhance the quantity of underrepresented minorities (URMs) in STEM—but it is also important for the quality of STEM productions as diverse groups bring diverse perspectives to the overall field and the knowledge it produces (BEST, 2004).

Over the past several decades, various strategies have been devised and implemented to address the challenges having to do with the quality, quantity and diversity of the STEM educational pipeline. At the postsecondary level in particular, STEM intervention programs (SIPs) have emerged on the campuses of virtually all four-year institutions of higher education not only as a means to foster, support, and sustain the interest of students in STEM, but also largely in a concerted effort to address the historical and perpetual underrepresentation of minority groups in STEM majors, as STEM degree holder, and in the STEM professions. More specifically, via a variety of services and activities including mentoring, tutoring, academic advising, and providing research opportunities, these intervention programs seek to increase the representation of minority groups in STEM fields, by not only improving the likelihood that they enter these fields, but that they are also retained through degree completion, and ultimately pursue advanced degrees in STEM fields or enter the STEM workforce.

However, despite the fact that many of these types of interventions have been in existence for years now, some even decades, there is little research on the actual efficacy of these programs or the benefits and services they provide in their efforts to successfully recruit and retain URMs in STEM or significantly decrease their underrepresentation in these fields. This paper explores the perspectives of SIP administrators in an effort to understand what "works" in the administration of these programs in terms of meeting the primary goals of recruiting, retaining, and graduating URM students in STEM. Ultimately, garnering the perspectives and views of SIP administrators, precisely those who often design, implement and direct these programs as well as the activities and services they provide, will contribute to the minimal existent research on the efficacy of these programs and the purported benefits of the services they provide for URMs in STEM.

LITERATURE REVIEW

Programs designed to improve and increase the representation of minority groups in STEM fields have been in existence for decades, and over the past twenty years have been rapidly and significantly increasing in number. These programs vary widely in that they are established for a range of educational levels (K-12, undergraduate, graduate, postdoctoral, entry level professional), are funded in multiple ways (federal agencies, colleges/universities, non-profit foundations) and have a variety of institutional bases and hosts (colleges/universities, consortia, professional associations) (Leggon & Pearson, 2006). While most STEM intervention programs at the undergraduate level generally provide student support in the form of social, financial, and academic assistance and resources (IHEP, 2009), they vary in the types of services and programs they offer which range from mentoring, tutoring, academic advising, and professional development activities as well as programs like living learning communities (LLCs), bridge/transition programs, and programs that provide students with year-long or summer

research experiences and opportunities (George-Jackson & Rincon, 2011). In particular, many undergraduate level SIPs are designed with the intent to specifically provide support and supplemental services for students who are academically unprepared (but exhibit the potential and capability) for the rigors of postsecondary education in general and STEM majors in particular (DePass & Chubin, 2008)

Although intervention programs focused on the recruitment and retention of underrepresented groups in the STEM fields have been in existence for decades on many university campuses, the numbers of underrepresented students in STEM remain small, and undoubtedly these numbers would be smaller without the efforts of these interventions. However, despite any actual gains in decreasing the underrepresentation of minorities in STEM, regardless of how small, or the potential for making significant gains in this area in the future, SIPs have been plagued by a problem that places their efficacy and subsequently their continued existence into question. In particular, one of the most common critiques of SIPs is that their design and implementation have typically not been guided or informed by research, but rather have been implemented in a more piecemeal style that has relied heavily on anecdotal information and intuitive approaches by those with a particular stake or interest in increasing the numbers of underrepresented students in STEM (Depass & Chubin, 2008). The consistent failure to use research to inform the design, implementation, and practices of SIPs is problematic largely because it is unknown what effect, if any, these interventions are having especially in comparison to programs that are designed and implemented utilizing research-based strategies and ideas. Nevertheless, these programs continue to be developed, implemented, and funded despite the fundamental lack of empirical evidence regarding their actual effectiveness.

Moreover, the existent literature that does address the efficacy of educational intervention programs in general presents its own set of challenges. In particular, the existent research tends to span several disciplines and researchers in these various disciplines use a variety of methods and backgrounds to conduct their work. Consequently, the use of a broad array of disciplines and methods by researchers makes it difficult for SIP practitioners to use the research to inform their program design, as well as the actual administration of their program's services, largely due to an inability to translate, understand, and apply the disparate research literature (DePass & Chubin, 2008).

In addition to the lack of research-based evidence to undergird the design and implementation of STEM intervention programs, a lack of evaluation of these interventions also contributes to how little we know about the actual efficacy of these programs. Evaluation of intervention programs allows us to assess whether they are meeting their objectives and goals; hence if the primary goals of a particular SIP are to recruit and retain underrepresented students in STEM fields, an evaluation is necessary to assess whether those goals and objectives are being met, and ultimately the program's efficacy as marked by an evaluator's determinations regarding the intervention's impact, growth, and sustainability among other factors (Leggon & Pearson, 2006).

As enrichment experiences like those provided via SIPs can have a critical impact on students' educational and career goals and choices, it is important to understand in a more systematic and empirically based way how and why SIPs are successful, and in particular the components or mechanisms that are integral to the efficacy of the programs, as well as to decreasing the persistent underrepresentation of minorities in STEM. Despite the proliferation of

SIPs in recent years, the numbers of URMs in STEM are still very small. Researchers remain unsure about what, if anything, these programs are doing that is or can be effective in significantly changing the tide of underrepresentation of minorities in STEM. Nevertheless, the very potential of these interventions to be a serious mitigating factor in the recruitment, retention, and completion of URMs in STEM majors as well as increasing their representation in the STEM professoriate and the STEM workforce, is reason enough to conduct serious, empirical research on this issue. Therefore, it is imperative that research be conducted that investigates the efficacy of SIPs and seeks to determine their effects and effectiveness, and subsequently to begin a concerted effort of replicating those components that are found to "work" in different settings, programs, and interventions in order to compound their overall effect and reach.

DATA AND METHODOLOGY

This research utilizes qualitative data collected as part of a larger study that explores the experiences of underrepresented undergraduates in STEM fields at ten large, public research universities as well as the factors that affect their participation in STEM. These ten universities were identified as collectively being significant producers of STEM degrees and traditionally offering intervention programs with the aim of increasing the participation and success of students in STEM.

In particular, the qualitative data from the larger study consisted of in-person interviews conducted with SIP program directors and administrators at ten large, public research universities in 2009, 2010, and 2011. These administrators and program directors administered a variety of programs ranging from living learning communities, summer research programs, bridge/transition programs, and first-year experience programs and offered a variety of services including mentoring, tutoring, advising, leadership and professional development all with the end goal of increasing the recruitment, retention, and completion of underrepresented students in STEM.

For the purposes of this research, secondary data analysis of the qualitative data was restricted to first-time interviews with administrators, faculty and staff affiliated with SIPs specifically targeted towards URM students (as opposed to other groups underrepresented in STEM, such as women). Therefore, while there were a total of 76 first-time interviewees (56 from year one, 20 from years two and three), only 56 met this criteria and were used as part of the secondary data analysis. Of these 56 interviewees, there were 35 males and 21 females; 27 whites, 25 African Americans, 2 Latinos, 2 Asian Americans and one Native American. Moreover, of these 56 interviewees, 19 had earned doctorate degrees, 6 were enrolled in doctoral programs, 17 held master's degrees, 6 held bachelor's degrees and 8 of the interviewees did not indicate their highest degree achieved. In addition, 34 of the interviewees indicated that they had a background in STEM, while 20 indicated they had no STEM background, and 2 did not indicate whether they had a STEM background or not.

The specific analysis for this study involved reviewing the interview transcripts for the 56 interviewees, using open-coding to organize data into "chunks" (Rossman & Rallis, 1998, p.171) and subsequently bringing meaning to these "chunks" of data by further categorizing them into themes.

FINDINGS

The data analysis resulted in three major themes with respect to what administrators believed "worked" in their efforts to administer effective and successful SIPs for URMs. The three themes that emerged from the data were: 1) student-centeredness 2) community building and 3) collaboration. These themes extend beyond the typical academic services and resources that are provided via most SIPs (i.e. tutoring, advising, research opportunities, etc.), and are in many ways more intangible, but nevertheless they are factors that these administrators' consistently indicated they believed made a real difference in the effectiveness of their SIPs and the work they do for URM students in STEM.

Student-centeredness

The administrators in this study largely indicated that one factor that they deemed critical to their ability to successfully administer the programs and services of their SIPs in a way that "works" for the URM students they served was to ensure that all aspects of the SIP were completely student-centered. These administrators explained that placing their focus on students in every way possible was one of the most important things they could do as administrators of SIPs for URMs. In describing more fully what they meant by having an absolute focus on students, these administrators discussed the importance of building relationships with students and in particular getting to know them not only academically and meeting their academic needs, but also personally and socially and providing for them in those ways as well. One administrator noted the importance and effect of relating with students on these various levels by stating:

> So, the program isn't just academic, and I guess that's what I really want to stress, because I feel like sometimes in the programs that I have been talking to, they're so worried about helping the student be academically successful. And unless you know that the students are coming from multiple backgrounds, where academics is what's keeping them—but they have children at home, or their parents are not working and they're paying their parents' bills or something—unless you learn the root of that student and learn how to develop them as a person, then academics is always gonna be secondary. So, we try to do both of that. I think that's the reason the program is successful, because we know each student by name…We don't forget one. They come in and see us all the time…they can just come in here and hang out…To them, I'm home…I think it's all about making that student feel like they have someone here.

This administrator highlights the importance of getting to know students that they serve and how making this relationship building with students an integral part and priority of the SIP not only benefits the targeted students, but also contributes to the overall success of the SIP.

Another administrator explained how they practiced being student-centered and building relationships with students specifically through mentoring, saying:

> So, though I wouldn't give myself the title of mentor, I think I do some mentor things. And I have some very real conversations with students. And there are some who I think have a pretty good relationship with me and feel very comfortable to talk to me about things that are going on…I like to build some very personal relationships with students and I think often times students are kind

> of looking for that kind of relationship and they don't get it necessarily from advisors…So I definitely like to spend more time with them and realize that it has an impact on them and when they see that I am investing in them and makes them step up their game a little bit more. They perform a little bit better.

Thus, this administrator connects their commitment to building both academic and personal relationships with students, and being student-centered more broadly, with the overall effectiveness of the SIP through their comment that students with whom they build these relationships often perform better academically.

Additionally, the administrators in this study seemed to be keenly aware of the critical nature of being student-centered by understanding and meeting students' needs not only for the continual development and improvement of the SIP, but more importantly for the success of the students they serve. One administrator stated:

> Well, I think [we] are really focused on needs assessment and really looking to our students and the experience they're having and sort of what they tell us in terms of, you know, continuing to evolve the program and add new components. So a big example of that is a few years ago when we started the program after we noticed that we had these 40 sophomores who were doing a lot for the program and the first-year students, but sort of what are they gaining from a professional development standpoint and academically from the program? And so, that's why we really try and spend some time monthly with them, focusing on their specific needs…Sometimes I feel like the sophomores have more needs than the first-year students, just because the university, I think, does a good job of helping first-year students, but you know, the sophomores get kind of lost. So we really try and focus on that.

Similarly, another administrator spoke to the importance of prioritizing the needs of the targeted SIP students over everything else, even against the larger goals of the specific department or college, particularly when those goals are fixated on increasing the numbers of underrepresented students in STEM but not necessarily on supporting those students and their success. This administrator explained:

> When I look at the needs of diversity in a college like [ours], my approach is always systemic. So, I'm…you know… not as interested in a numbers game. You know, get me 10 of these and 15 of these, you know, so we can match up our numbers needs with somebody's idea of what the right quotient of brownness is in a place. If the environment isn't there to support students and their educational goals and needs in a culturally appropriate manner, it seems to me that you've wasted your time.

Many of the administrators in this study provided accounts of their efforts to administer SIPs that were absolute in their student-centeredness. These administrators indicated that they accomplished this goal in more than the typical ways of simply providing academic resources, but also by building academic and personal relationships with the students, advocating for them in all aspects of their education, and taking time to understand their needs and subsequently making it a priority to meet those needs. Ultimately, for these administrators this focus on being student-centered was critical to the effectiveness of their SIPs for URM students in STEM.

Community Building

In addition to being student-centered, another theme that emerged among these administrators as something that "works" in the successful administering of SIPs for underrepresented students was having a strong focus on and a commitment to being and providing a supportive community for students. In particular, many of these administrators discussed the necessity of underrepresented students having a solid academic and social community as they entered and progressed in STEM fields. One administrator in particular noted the importance of SIP administrators facilitating the establishment and maintenance of a community for URM students in STEM by highlighting how their own participation as an undergraduate in the very SIP they were now directing was crucial to their persistence in STEM. This administrator stated:

> A lot of our students that are in our program are very good students. They were the leaders at their high schools. They're high achieving. They're coming to [this university], so you know they did well. But when they get here, they're very much in the minority, so we have found that there's a disconnect between who they hang out with socially and who they hang out with academically. So, for example, the people I knew were from my school, but they were English majors. They weren't chemistry majors, and I didn't know how to connect with other science majors. And the program helped me do that. So, we're really developing a social academic community to build confidence and to make relationships and things. And we're already pretty motivated, which helps. So, for me it was very much a confidence issue. I was getting good grades, but I felt like I was a horrible as a science student, particularly in mathematics. So, I was going to leave, because in the mathematics department at that time, the interactions with the professors weren't good, and I felt very stupid, even though I was getting an A. So, I was ready to leave and go over to possibly food science or something else, to avoid the math—not so much the chemistry. It was the TA who heard me talking about it…She flagged the director, and the director put her calendar in front of me and said, "Why don't we meet?" and she really got to the issue of what was going on, "This doesn't make sense. She's getting really good grades in chemistry, she's doing really well." So, she talked through a lot of those things with me. So, I learned that not only are the academics important, but it's also the social and the confidence aspect that make a huge difference, and the feeling of having a good community that made a big difference.

This former SIP participant turned SIP administrator provides a compelling example of the importance of the community building SIPs engage in to provide a support system for URMs in STEM and aid in their persistence and completion.

Moreover, many of the SIP administrators in this study were explicit about the role community building and having a supportive community plays for URM students in STEM not only with respect to their academics, but students' career choices and goals as well. One administrator pointed out:

> I think people have preconceived ideas of what your capabilities might be by just looking at you. And, unless they have other types of experience they tend to go with those expectations and act on them. So, many times students are guided out of areas that they should not be guided out of. So, over the course of my summer

> program because students did not have knowledge about some of these areas we were able to better inform them. So, how you make decisions, who helps you facilitate those decisions and what they do in the facilitation process, I think is very, very key. And I think too often individuals who would be mentors may be well intended but because of their perspectives tend to give information that might not be the best for the individual. So, one of the things we try to do with our STEM programs is to make sure that these students are only provided information where they are supported in what is it they want to do. And, assuming they get certain parts. I mean you have to have obviously the academic part. But to provide that level of support that many times that is all they need because they need someone to tell them yes you can do this. I mean too often they hear well you know maybe you should try something else. So, hearing that they can do it plus interacting with other students who look like them who are similarly situated they develop again that community support. I think that has been again a major accomplishment of the program in terms of helping with success.

In addition to pointing out the connection between the importance of having a supportive community and its impact on the success of underrepresented students in STEM, this same administrator also noted the impact that SIPs have in general on the representation and participation of URMs in STEM, stating:

> You know STEM is one of those areas that is constantly now being highlighted as you know as being highly deficient in terms of students of color as well as faculty of color. As well as scientists of color. So, we are trying to as we reach across the campus and these programs become more and more visible I think it begins to help others appreciate the importance of what it is that we are doing and particularly for the scientific community I think it helps them understand what their respective roles are and how they might be able to contribute so it is developing I think a broader network of participation. It also I think helps students who might have concerns or doubts about STEM. Helps support them in terms of making some of the decisions that they might not make otherwise, through again conversations with our people, conversations with this larger network I have mentioned.

Thus, this administrator offers a specific example of how this particular SIP engages in efforts to provide URMs in STEM a supportive community by bringing awareness to broader factions with a stake in addressing the persistent underrepresentation of minorities in STEM (i.e. the campus community, the scientific community, etc.) of their role in helping to build and sustain a supportive community for these students. Ultimately, SIP administrators in this study were adamant about the role of community building as an aspect of SIPs that was critical to their success and effectiveness in serving URMs in STEM and subsequently these students' success

Collaboration

Both formal and informal collaborative work and efforts were another component of SIPs that the administrators in this study expressed were necessary and important to their success in serving URM students in STEM. In particular, these administrators discussed a range of

collaboration efforts and activities that they were involved in to ensure that students not only received the services, programming and information that they needed, but also received them in the most efficient and timely manner. One administrator of an SIP targeted at URM students in the applied health sciences was explicit about the role of collaborative work in efficiently administering the intervention, stating:

> We've worked a lot with a lot of the other programs on campus. So, for example, the Office of Minority Student Affairs…we met this summer, because the students that I service they service also. So, it's an issue of dislocation of services, and how can we not duplicate but learn that students can receive different information from multiple people, and it's okay to have an army around them. So, we work together to make sure that the language and the services that we provide are more streamlined for the student. So, instead of having two meetings with me and saying the same thing again, sometimes we'll have joint meetings where the student sees all three of us in a room, and that lets them know that we're all supporting them.

This administrator highlights how collaboration contributes to the effectiveness of SIPs for URM STEM students by allowing for the easier dissemination of information, services, and programming.

Other administrators discussed the importance of collaborating with faculty in administering their programs and the benefits that these types of collaboration provided for the intervention in general and student participants in particular. One administrator purported:

> Across the departments, we have a core group of people that would do anything to support these initiatives. I've been working with one faculty for the seventeen years that I've been here, every year. And if I don't do something with him then he seeks me out and wants to know what can he do? He travels to HBCUs. He has sat on committees of undergraduate students at HBCUs that he's been trying to recruit. He sat on their committees, and then once they've finished their degrees, he's transitioned them here into his program. I have faculty members that do that.

Likewise, another administrator was also clear about the important role of collaboration in the administering of SIPs for URM students, succinctly stating, "I think we have a lot of work to do, quite honestly. And I'm not sure if the program can work in a vacuum to accomplish our goals. I think it involves a lot of, as you mentioned, collaboration with other units, with our faculty and with the student culture." Furthermore, this same administrator also discussed the benefits that accrue to URM STEM students as a result of SIPs being involved in multiple collaborative efforts, explaining:

> It is a very nice partnership that we have with the Engineering Library where we are able to coordinate tutoring resources and mentoring resources for all engineering students. It is our hope that through my engagement with that we have a lot of our students that are marginalized either students of color or first generation college attendees or even international students that are marginalized and we hope that they can feel a little bit more supported here in the College… One partnership that I'm very happy to be developing is with the Division of General Studies. I want to increase the access to students that want to be

> engineers, so having a partnership with them allows me to have students engaged even before they're in the College. They need to be taking the right courses with the right focus and emphasis in particular courses, so not that I don't trust advisors in DGS, but it helps for the students to know where they need to go to realize their interests in engineering. So, that's one I'm developing and very—I'm looking forward to working with—I'm in touch with the cultural centers. I think that's kind of important. Collaboration there is more in terms of information sharing and in terms of getting our students visible on the southern part of our campus, as well, although it's very hard. But we want to make sure that the students connect with them, as well.

Ultimately, the SIP administrators in this study credit initiating, facilitating and being actively engaged in collaborative efforts, particularly those with the best interest of students at their core, as a critical and necessary component of effectively and successfully administering the intervention and its programs and services to URM students in STEM.

SUGGESTIONS FOR BEST PRACTICES

This work reveals that administrators of SIPs that target URM students in STEM have concrete ideas about what "works" in the administration of their interventions and in ways that are particularly effective and make a difference for the students they serve. The findings of this study demonstrate that these administrators of SIPs targeting URM students in STEM recognize and practice student-centeredness, community-building, and collaboration as a means to effectively aid in the retention and completion of underrepresented students in STEM. Specifically, these administrators noted and were able to articulate the important role that taking these actions as SIP administrators played in not only the academic achievement and success of URM STEM students' but in their connection and engagement with STEM and the overall university as well.

The indication by SIP administrators in this study, that being student-centered, focusing on community building, and engaging in collaborative efforts are an effective means of integrating URM STEM students academically and socially, actually supports research findings that are the foundation for one of the most successful SIPs in terms of facilitating the entrance of URM into doctoral programs—the Meyerhoff Scholar Program. In fact, there are several factors that have been identified as effective in increasing the participation of URMs in STEM: 1) Enhancing substantive knowledge and technical skills; 2) Support at all levels—financial, academic, professional and social; 3) Facilitating the creation of networks and sustaining them; and 4) Providing bridge experiences focused on facilitating successful transitions from one educational milestone to the next and on helping students become socially and academically integrated (Maton & Hrabowski, 2004; Maton, Hrabowski, & Schmitt, 2000). The three themes that resulted from this research align well with these established practices that have been deemed effective and successful.

It would be prudent for SIP administrators of interventions that specifically target URMs in STEM to make student-centeredness, community building and collaborative efforts a priority and integral part of the administration of their SIPs. Even though much research still needs to be conducted with respect to investigating the efficacy of SIPs in an effort to better understanding what really "works" in these interventions for URM students in STEM, inarguably implementing these actions could do no harm, but in fact as suggested by the administrators in this study, could

be instrumental in the retention and completion of these students in STEM majors, as well as their overall participation and experience in these fields. Although the findings presented in this paper are only a starting point for more research on the efficacy of SIPs for URMs in STEM, it is clear that SIP administrators must go further in their efforts to develop and implement successful and effective SIPs for URMs in STEM. Future efforts to inform the development and implementation of effective SIPs must be guided by rigorous and systematic research, as opposed to the current dependency on rhetoric and the personal convictions of administrators, which inevitably will not suffice to sustain these much needed intervention efforts for targeted students.

CONCLUSION

This work provides other avenues and areas of exploration for future research as we continue to build the research and literature on how and why SIPs work or are successful. It is possible with the addition of this work and other research on educational interventions, SIP administrators can begin replicating and institutionalizing some of the factors that are determined to "work" in creating, implementing, and sustaining SIPs for URM undergraduates, especially the non-academic factors that supplement the academic work that these programs do. Institutionalization of SIPs is important because it indicates some commitment from the institution to the intervention and its mission and goals and subsequently means that it is not a marginal or fringe component, but is an integral part of the fabric of the institution and its goals and commitments. Ultimately, the goal of future efficacy research on SIPs for URMs should be to identify the components that "work" not only to simply determine the effectiveness of the specific intervention, but also to quantify them and subsequently replicate them in other programs in an effort to increase not only the effectiveness of SIPs but also their sustainability.

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