AC 2012-4806: LSAMP INDIANA: LESSONS LEARNED FROM A DIVERSITY PROGRAM SERVING UNDERREPRESENTED MINORITY STUDENTS

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Louis Stokes Alliance for Minority Participation

LSAMP-Indiana Alliance: Lessons Learned from a Diversity Program Serving Underrepresented Minority Students

Abstract

Since the inception of the Louis Stokes Alliance for Minority Participation (LSAMP) Indiana program in 2003, approximately 1000 underrepresented science, technology, engineering, and mathematics (STEM) students have engaged in academic and professional development activities across eight campuses in a Midwest state. These institutions vary in several ways – location (rural vs. urban), academic offerings (engineering degrees only at two campuses), number of underrepresented STEM students enrolled (approximately 800 vs. 40) and campus type (regional vs. top research). Some of the goals of the program have included peer teaching and mentoring in introductory and upper-level STEM courses, mentoring students in research opportunities; and engaging students in a sophomore learning community. Most recently, members of the program have developed new opportunities and social media to recruit and connect student scholars and faculty members.

This paper provides an overview of the benefits and challenges of working with a statewide program for underrepresented minorities in a state with a low population of minority students and with differing institutional characteristics across campuses. Such benefits and challenges will be analyzed within the context of a SWOT (strengths, weaknesses, opportunities, and threats) analysis. Drawing upon evaluation reports, the authors present lessons learned from conducting a large-scale diversity initiative and identify transferable ways to engage the next generation of underrepresented students in STEM educational and professional development activities.

Overview

The Louis Stokes Alliance for Minority Participation (LSAMP) Program was established in 1991 by the National Science Foundation (NSF) to implement strategies designed to increase the quantity and quality of minority students graduating with science, technology, engineering, and mathematics (STEM) baccalaureate degrees and continuing to graduate in STEM education². The LSAMP Program executes its mission through grants provided to multi-institutional Alliances across the country. These Alliances vary in size depending upon the number of institutions and student participants in the Alliance.

Since the inception of the Indiana LSAMP Alliance in 2003, approximately 1000 underrepresented STEM students have engaged in academic and professional development activities across eight campuses. The Indiana LSAMP Alliance (hereafter referred to as LSAMP Indiana) partner institutions are: Ball State University, Indiana University Bloomington, Indiana

University Purdue University Indianapolis (IUPUI), Indiana University Northwest, Indiana State University, Purdue University Calumet, Purdue University North Central, and Purdue University West Lafayette. These institutions vary in several ways – location (rural vs. urban), academic offerings (engineering degrees only at two campuses), number of underrepresented STEM students enrolled (approximately 800 vs. 40) and campus type (regional vs. top research).

Partnering institutions have kept their commitment to diversifying STEM education in various ways. Some include: academic enrichment programs and learning communities, undergraduate research opportunities, professional development workshops, and faculty mentoring. Most recently, members of the program have developed new opportunities and social media to recruit and connect student scholars and faculty members across LSAMP Indiana.

This paper provides an overview of the benefits and challenges of working with a statewide program for underrepresented minorities in a state with a low population of minority students and with differing institutional characteristics across campuses. Such benefits and challenges will be analyzed within the context of a strengths, weaknesses, opportunities, and threats (SWOT) analysis¹. Initially, the LSAMP Indiana program goals will be provided. Drawing upon evaluation reports, the authors will then present the SWOT analysis of the LSAMP Indiana program. Finally, lessons learned from conducting a large-scale diversity initiative and transferable ways to engage the next generation of underrepresented students in STEM educational and professional development activities will be identified.

Program Goals

The over-arching goal of LSAMP is to strengthen the capacity of undergraduate minority students who graduate with STEM degrees and enter graduate STEM program or STEM careers. To this end, LSAMP Indiana implements programs that provide students with research and teaching experiences designed to develop their academic and social identification within their STEM discipline and serve as a solid foundation for student achievement. The following goals correspond to the two phases of the LSAMP Indiana Project:

Phase I Goals (2003 – May 2007):

- Provided undergraduate research experiences and other academic enrichment opportunities
- Sustained teaching and mentoring during gatekeeper and upper-level courses
- Provided first-year students with personalized interactions with graduate students and faculty mentors
- Created professional and personal development opportunities

Phase II Goals (May 2007 – April 2012):

- Expanding the LSAMP Indiana Alliance by three campuses, from five to eight primary members, and adding Ivy Tech Community College as a collaborative partner
- Expanding the Phase I Summer Transition and Academic Research (STAR) Program for 1st and 2nd year students to the new Phase II partners
- Incorporating the Phase I Supplemental Instruction into a new, more comprehensive program
- Emphasizing undergraduate research and faculty mentoring this is complemented by Learning Communities, peer tutoring, and professional development activities
- Enhancing the Alliance's coordination and development programs to maximize collaboration and effectiveness.

SWOT Analysis

This section frames the ten-year experiences of the LSAMP Indiana program based upon its strengths, weaknesses, opportunities, and threats (SWOT). Additional details about each of these areas are presented below.

Strengths

The establishment of the program itself is among its greatest strengths. LSAMP Indiana is a formal network that was needed to intervene and to address the low numbers of underrepresented minorities in STEM fields within the state. It was established as a longitudinal education consortium specifically designed to increase students' motivation and commitment to STEM fields. Initially, five institutions came together to form this Alliance; now there are eight – including Ivy Tech community college. Furthermore, the LSAMP Indiana Alliance is providing a far-reaching impact as they expand to other campuses, since these campuses are geographically distributed across the state of Indiana.

The second strength of the program has been the link between undergraduate research experiences and mentoring. STEM students across the state of Indiana are gaining high-quality research experiences through the LSAMP program. Not only are students' academic being enhanced as the result of their involvement, they leave with increased awareness of post-baccalaureate opportunities in STEM, and misconceptions about doing research are dispelled. Furthermore, LSAMP Scholars are provided with ample opportunities to present their work locally at the LSAMP Indiana annual research conference and regionally and nationally at disciplines research conferences. However, none of this would be possible without the support of STEM faculty willing to lead the students' research experiences. An increasing number of faculty across the state who possess various research interests, opportunities and facilities have been willing to mentor LSAMP Scholars. This affords students opportunities for campus exchanges based on their research interests. In some cases, faculty-mentor relationships last

much longer than the summer- or year-long tenure of the LSAMP research experience. New opportunities result from the mentorship, like the inclusion of students on peer-reviewed publications and continued mentoring throughout graduate school and STEM careers.

LSAMP Indiana facilitates academic and social integration among its Scholars^{3,4}; this is another asset of the program. Some LSAMP Indiana institutions partner with and share activities with other organizations on their respective campuses (e.g., McNair Scholars Program, Minority Engineering Program). Moreover, the establishment of a one-credit hour LSAMP professional development seminar is one of the best examples of academic integration (and an example of the institutionalization of the LSAMP Indiana Program). For social integration, peer mentoring and tutoring are among the largest components of the LSAMP Indiana program. Consequently, students learn more about their peers, build short- and long-term relationships, and learn about graduate school.

Finally, the mechanisms used to facilitate cross-campus collaborations among LSAMP Scholars and administrators are a strong element of the program. During the Annual LSAMP Indiana Research Conference, students present their research, hear about the work of their peers, and interact with other STEM students and faculty from all over the state. A Mentoring and Diversity handbook has been created for use across the Alliance,⁵ and in fall 2011, faculty and staff across campuses engaged in a corresponding mentoring and diversity webinar co-facilitated by Purdue University's Diversity Resource Office. To connect students and faculty across the state, the Alliance create Facebook and twitter accounts. In addition, all campus directors and administrations met during the summer during an annual retreat to share information, discuss experiences, and brainstorm ideas for improvement.

Weaknesses

Some weaknesses within LSAMP Indiana include the following:

- Definitions of “community” vary across campuses. Thus, campuses are taking different approaches to community building. This has subsequently been defined by Directors as a community of peers and relationships with mentors.
- Two out of eight campuses do not have summer undergraduate research opportunities through LSAMP.
- There are differences in institutional support (e.g. access to minority students and resource allocations). For example, not all of the LSAMP Indiana Alliance institutions partner with their respective Student Research offices (if they exist) or diversity offices.
- There is a need to find the balance between working in silos vs. working as alliance.
- Over time, director turnover has occurred, thereby creating a need to orient new directors and administrators.

- Tracking of students varies depending upon students classification as a Level 1 LSAMP student (i.e., fully engaged in the program) or Level 2 LSAMP student (i.e., engaged peripherally or minimally in the program)
- Budget needs fluctuate dependent upon the number of LSAMP-eligible students enrolled at each institutions
- Variances across campuses in administrative commitment and assessment and evaluation efforts.
- Varied responses by campuses to evaluation reports and a need to use these reports to inform practice.

Opportunities

Some opportunities include the following:

- Creation of a formal, longitudinal mechanism for tracking students throughout the program (activities they participate in, etc) and keep in touch with these students after they finish LSAMP.
- Expansion of students' experiences to international locations
- Broadening of the number and types of cross-campus collaborations across the Alliance with benefits to both students and faculty
- Expanded use of the Alliance's Facebook account for members to share information with each other, mentors and students.
- Recruitment of rising sophomores for summer undergraduate research opportunities (Currently, Summer undergraduate research opportunities are mostly for juniors and seniors)
- Advertisement of LSAMP Indiana's students' achievements across the state to corporate and government stakeholders to garner more high-level support for LSAMP.
- Development of LSAMP campus and LSAMP Indiana research agendas that answer questions about elements of the LSAMP Indiana program and its stakeholders

Threats /Challenges

Possible threats to the LSAMP Indiana program include the following:

- More resources (funding) are needed to expand the program (advertisement, recruitment, programming)
- LSAMP Programs on the respective campuses need to be institutionalized. For long-term sustainability, the activities of the LSAMP Program need to become part of the fabric of the institutions at which they exist. For example, some LSAMP campuses do not contribute matched funds support, thereby limiting recruiting and programming activities.
- Recruiting underrepresented minorities students in Indiana is difficult. Due to state laws, the Alliance cannot advertise that LSAMP is for underrepresented minority students. Consequently many students are recruited one at a time by word of mouth. Recruiting is a task that is both time-consuming and cumbersome.

- Comparable undergraduate research programs on campus offering students higher stipends. Thus, students with the highest credentials are more selective.
- Perceived pressure from NSF to select students who are already academically competent and/or already interested in STEM post-baccalaureate. There is little (to no) room in the budget to support academically-challenged students.
- Scheduling conflicts among students given their university obligations and engagement with other minority-serving programs

Lessons Learned/ Recommendations

Among the suggestions for the LSAMP Indiana program and other programs with similar goals or collaborations across institutions include the following:

- Leaders should initiate consistent communication via email, phone, online share documents or systems, and in-person meetings so as to enhance Alliance coordination and collaborations.
- To recruit more rising sophomores, increase the scope of LSAMP outreach to students and families, stressing the value of undergraduate research experiences early in students' careers.
- Identify ways to build community across communities (silos vs. alliance). One of the most powerful ways is through the use of technology (e.g. Facebook pages).

Summary of Outcomes

Since 2003, LSAMP Indiana has supported over 400 students in academic and summer research programs and over 500 students in peer mentoring programs. Across the Alliance, hundreds more have obtained book scholarships and graduate school application stipends and have attended LSAMP workshops, tutoring sessions, and the annual statewide research conference. As a result, LSAMP Indiana has established a global network of undergraduate and graduate students, faculty, staff, and administrators with goals of increasing the number of underrepresented minority students (URMs) graduating with baccalaureate STEM degrees. An evaluation of the elements of this program might serve as a model for other programs aimed at exposing underrepresented minorities to STEM careers.⁶

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